

List of Research Workers 1966

RESEARCH WORKERS IN AGRICULTURE, ANIMAL HEALTH
AND FORESTRY IN THE COMMONWEALTH AND IN
THE REPUBLIC OF IRELAND



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LIST OF
RESEARCH WORKERS

1966

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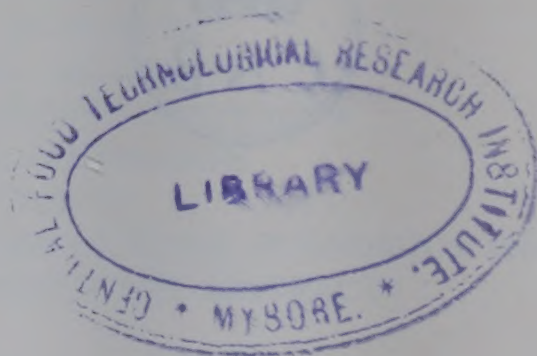
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INTRODUCTION

The List contains the names and postal addresses and, where supplied, the telephone numbers and abbreviated telegraphic addresses of research workers in Agriculture, Animal Health and Forestry, at Government and State-aided institutions in countries contributing to the Commonwealth Agricultural Bureaux; and indicates generally the lines of study in which each worker is specially interested. It purports to be correct up to the end of 1965, but more recent information is included wherever possible.

The British Commonwealth Scientific Conference, 1936, laid down the general pattern for this List when it said that the volume should be strictly limited to those who were engaged in research or actually concerned with its organization; that only the more senior workers need be mentioned to the exclusion of junior technical assistants; and that the special line of study of each research worker should be briefly stated.

The Review Conference of 1946 and 1950 extended the List to research workers in universities and museums but, primarily in order to keep down the size and cost of the publication, the Review Conference 1955 excluded people in extension and advisory services as distinct from research.

The 1960 Review Conference recommended the continuance of a consolidated as distinct from a sectional List; while the 1965 Conference included agricultural economists and reinstated the headquarters addresses of extension services.

The volume is divided into four parts. Part A gives details for the Commonwealth Institutes and Bureaux; Part B gives the names and addresses of research workers by countries; Part C is an index of the institutions mentioned in the List; and Part D an alphabetical index of the names of research workers.

The particulars given in this publication have been compiled from information supplied by the governments and authorities concerned.

Errors and omissions should be brought to notice through Liaison Officers who are listed on pages 2 to 4.

The lists for Guyana, Botswana and Lesotho were prepared before they became independent. Barbados achieved independence after the List had been printed.

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12 October, 1966.

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rearing Lepidoptera on synthetic diets

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A. D. Lees, M.A., Ph.D.: control of polymorphism in aphids; photoperiodism

A. Milne, M.A., D.Sc., Ph.D., F.I.Biol., F.R.S.E.: population ecology; ecology
of Tipulidae

J. E. Treherne, B.Sc., Ph.D.: neurophysiology of arthropods; gut absorption in
insects

Unit of Muscle Mechanism and Insect Physiology

(at Department of Zoology, University of Oxford). Tel.: Oxford 55278

Prof. J. W. S. Pringle, M.B.E., D.Sc., M.A., F.R.S., *Director (Honorary)*

Miss D. E. Ashurst, M.A., D.Phil.

A. C. Neville, B.A., Ph.D., F.R.E.S.

E. A. Newsholme, M.A., Ph.D.

R. N. Pau, B.A.

R. T. Treger, M.A., M.Sc.

D. C. S. White, B.A.

D. L. Whitehead, M.A., D.Phil.

Unit of Nitrogen Fixation

(at The Chemical Laboratory, The University of Sussex, Brighton, Sussex).
Tel.: Brighton 66755

Prof. J. Chatt, M.A., Sc.D., F.R.I.C., F.R.S., *Director*: transition metal compounds containing anionic nitrogen, hydrogen and hydrocarbon radicals as ligands

Prof. J. R. Postgate, M.A., D.Phil., D.Sc., F.I.Biol.: factors influencing asymbiotic microbial nitrogen fixation

M. Kelly, M.Sc., Ph.D., A.R.C.S.: cell-free nitrogen fixation in *Azotobacter spp.*

G. J. Leigh, Ph.D.: synthetic analogues of natural nitrogen fixing systems

R. L. Richards, Ph.D.: metal-nitrogen bonding in co-ordination compounds

M. G. Yates, Ph.D.: nitrogen fixation in *Desulfovibrio desulfuricans*

Plant Growth Substance and Systemic Fungicide Unit

(at Wye College, Wye, Ashford, Kent). Tel.: Wye 401

Prof. R. L. Wain, D.Sc., F.R.S., *Director (Honorary)*

R. Atkin, B.A.: the influence of kinins on plant metabolic processes

C. H. Fawcett, M.Sc., Ph.D.: synthesis of plant growth regulators; isolation and identification of naturally occurring antifungal plant constituents

K. Rothwell, B.Sc., Ph.D.: synthesis of plant growth regulators; isolation and chemical examination of hormone inhibitors in plant tissues

T. A. Smith, B.Sc., Ph.D.: studies on selective toxicity

D. M. Spencer, B.Sc., Ph.D.: systemic and direct fungicidal activity of synthetic and natural products

H. F. Taylor, B.Sc.Hort.: hormone and hormone inhibitor status of plant tissues

S. T. C. Wright, B.Sc., Ph.D.: interaction of gibberellins, kinins and auxins in the growth of plant tissue

Unit of Plant Physiology

(at Imperial College of Science & Technology, Prince Consort Road, London, S.W.7). Tel.: Kensington 5111

Prof. C. P. Whittingham, B.A., Ph.D., *Director*: physiology and biochemistry of photosynthesis

T. A. Dyer, Ph.D.: extraction and fractionation of nucleic acids

A. J. Keys, Ph.D.: plant nucleotides and nucleotide co-enzymes

C. L. Mer, Ph.D., A.R.C.S.: carbon dioxide and cell division

Miss M. Radley, Ph.D.: the bioassay of gibberellins

Unit of Reproductive Physiology and Biochemistry

(at the Molteno Institute, University of Cambridge). Tel.: Cambridge 50577
(and at Animal Research Station, 307, Huntingdon Road, Cambridge).
Tel.: Cambridge 76278

T. R. R. Mann, C.B.E., M.D., Sc.D., Ph.D., F.R.S., *Director (Honorary)*: physiology and biochemistry of semen and of the male reproductive tract; hormonal and nutritional aspects of animal reproduction

L. E. A. Rowson, O.B.E., M.R.C.V.S., *Deputy Director (part-time)*: ovum and embryo transplantation in large animals; physiology of pregnancy

C. E. Adams, B.Sc., Ph.D.: factors controlling embryonic development; ovum transplantation in small animals; foetal mortality

J. C. Bournsnel, B.Sc., Ph.D., F.R.I.C., A.R.C.S.: chemistry of seminal proteins; application of radioactive substances to studies of reproduction

E. F. Hartree, M.A., B.Sc., Ph.D.: physiology and chemistry of mammalian spermatozoa

Miss Mary F. Hay, B.Sc., Ph.D.: histology

UNITED KINGDOM

E. J. C. Polge, B.Sc.Agr., Ph.D.: preservation of semen and artificial insemination in pigs

Unit of Soil Physics

(at School of Agriculture, University of Cambridge). Tel.: Cambridge 58381
(and at Huntingdon Road, Cambridge). Tel.: Cambridge 76190

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G. N. Evans, Ph.D.: mechanical properties of unsaturated soils

E. G. Youngs, Ph.D.: water movement in saturated and unsaturated soils

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(at Department of Statistics, Meston Walk, Old Aberdeen). Tel.: Aberdeen 40241, Ext. 433

Research on statistical theory and techniques required in agriculture, and consultative assistance to institutes and individuals engaged in agricultural research in Scotland.

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M. R. Sampford, M.A., D.Phil.

M. E. Woodward, M.Sc.

Statistics Group

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R. C. Campbell, M.A., Ph.D., *Officer-in-Charge (Honorary)*

T. F. J. Hobson, B.Sc., A.I.M.L.T.: biometry and programming

J. G. Rowell, M.A., A.I.S.: animal experimentation

Unit of Structural Chemistry

(at University College, Gower Street, London, W.C.1). Tel.: Euston 7050

The formation of complexes by alkali metals and alkaline earth metals and their study by X-ray crystal structure analysis.

Prof. R. S. Nyholm, D.Sc., F.R.S., F.R.I.C., *Director (Honorary)*

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H. Lüth, M.Sc.

Virus Research Unit

Huntingdon Road, Cambridge. Tel.: Cambridge 76146, 76620

R. Markham, M.A., Ph.D., F.R.S., *Director*: virus and nucleic acid structure

M. W. Rees, *Deputy Director*: structure of virus proteins

D. B. Dunn, M.A., Ph.D.: structure of nucleic acids

J. H. Hitchborn, B.Sc., Ph.D.: infectivity of plant viruses

M. W. Johnson, B.A., Ph.D.: chemistry of viruses

A. R. Trim, B.A., Ph.D.: chemistry of viruses and nucleic acids

Other Scientific Staff

H. B. Carter, B.V.Sc., F.I.Biol.: wool climatology at Department of Textile Industries, Leeds University

H. T. MacPherson, B.Sc., Ph.D.: grass conservation at Department of Chemistry, University of Edinburgh

Mrs. C. L. Mann, M.D., Ph.D.: biochemistry of reproductive organs at School of Agriculture, University of Cambridge

J. Smartt, Ph.D.: study of plant evolution in *Phaseolus* at School of Agriculture (University of Cambridge)

ENGLAND AND WALES

STATE INSTITUTIONS

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD

National Agricultural Advisory Service

HEADQUARTERS: Great Westminster House, Horseferry Road, London, S.W.1.
Tel.: Victoria 8511

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T. Allsop: livestock husbandry

P. H. Brown, N.D.H.: horticulture

R. Coles, M.Sc.Econ., B.A., Ph.D., D.Sc.Agr., D.V.Sc.: poultry

C. Culpin, O.B.E., M.A., Dip.Agr.(Cantab.), M.I.B.A.E.(RD.): mechanization
(at N.I.A.E., Wrest Park, Silsoe, Beds. Tel.: Silsoe 421)

A. J. Davies, B.Sc.: farm management

R. Gardner, N.D.H.: experiments (horticulture)

E. Ll. Harry, C.B.E., M.Sc.Agr.Econ., B.Sc.Agr.: agriculture

P. J. Macfarlan, B.Sc., N.D.A., N.D.D.: experiments (agriculture)

N. H. Pizer, M.Sc., Ph.D., F.R.I.C.: science

REGIONAL CENTRES

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(E.) G. Elis Jones, B.Sc.

(W.M.) Miss A. A. Nichols, B.Sc., M.S., Ph.D., N.D.D.(Corn.)

(Y.L.) J. J. Panes, B.Sc., M.S. (Mich.)

(S.E.) C. A. Scarlett, B.Sc., F.R.I.C., A.K.C.

(W.) S. B. Thomas, M.Sc.

Entomology

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(E.M.) B. A. Cooper, B.Sc., F.R.E.S.

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Nutrition Chemistry

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(E.M.) W. Lewis, B.Sc., A.R.I.C.

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UNITED KINGDOM

Plant Pathology

- (E.) G. H. Brenchley, M.A.
(W.) W. Campbell, B.Sc.
(W.M.) H. E. Croxall, B.Sc., Ph.D.
(N.) D. L. C. Davies, B.Sc., Ph.D.
(S.E.) H. H. Glasscock, M.Sc., Ph.D. (at Regional Sub-Centre, Olantigh Road, Wye, Nr. Ashford, Kent. Tel.: Wye 201)
(E.M.) I. F. Storey, B.Sc., Ph.D., D.I.C.
(Y.L.) R. E. Taylor, B.Sc.Agr., Ph.D.
(S.W.) A. G. Walker, B.Sc., Ph.D.

Soil Science

- (W.M.) W. Dermott, M.Sc.
(E.) J. B. E. Patterson, M.Sc., F.R.I.C.
(W.) E. Roberts, M.Sc. (at Bangor Sub-Centre, Bryn Adda, Penrhos Road, Bangor, Caernarvonshire. Tel.: Bangor 2561)
(S.E.) T. H. Rose, B.Sc., Ph.D., N.D.A. (at Regional Sub-Centre, Olantigh Road, Wye, Nr. Ashford, Kent. Tel.: Wye 201)
(N.) K. Shaw, B.Sc., Ph.D., F.R.I.C.
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(N.) *Northern Region*: Government Buildings, Kenton Bar, Newcastle upon Tyne, 3. Tel.: Newcastle 86-9811
(Y.L.) *Yorks and Lancs Region*: Block 2, Government Buildings, Lawnswood, Leeds, 16. Tel.: Leeds 67-4411
(E.M.) *East Midland Region*: Shardlow Hall, Shardlow, Derby. Tel.: Shardlow 313/7
(W.M.) *West Midland Region*: "Woodthorne", Wolverhampton, Staffs. Tel.: Wolverhampton 53141
(E.) *Eastern Region*: Block C., Government Buildings, Brooklands Avenue, Cambridge. Tel.: Cambridge 58951
(S.E.) *South Eastern Region*: Government Buildings, Coley Park, Reading, Berks. Tel.: Reading 54881
(S.W.) *South Western Region*: Block 3, Government Buildings, Burghill Road, Westbury-on-Trym, Bristol. Tel.: Bristol 62-2851
(W.) *Wales*: Welsh Department, Trawscoed, Aberystwyth, Cardiganshire. Tel.: Crosswood 255/9

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R. Gardner, N.D.H., *Director of Experiments*: horticulture

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F. E. Shotton, M.A., Dip.Agr.(Cantab.), *Director**Trawscoed Experimental Husbandry Farm*

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W. M. R. Evans, M.Sc., *Director*

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Cleppa Park Experimental Horticulture Station

Cardiff Road, Newport, Mon. Tel.: Castleton 451

E. G. Williams, B.Sc., *Director**Efford Experimental Horticulture Station*

Lymington, Hants. Tel.: Lymington 3341

S. P. Craze, N.D.H., *Director**Fairfield Experimental Horticulture Station*

Greenhalgh, Kirkham, Lancs. Tel.: Kirkham 3241 and 2579

A. J. Bedding, M.Sc., B.Sc.Hort., N.D.H., F.R.H.S., *Director**Kirton Experimental Horticulture Station*

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UNITED KINGDOM

Luddington Experimental Horticulture Station

Stratford-on-Avon, Warwicks. Tel.: Welford-on-Avon 275 and 297

A. R. Carter, N.D.H., *Director*

Rosewarne Experimental Horticulture Station

Camborne, Cornwall. Tel.: Camborne 3222 and 2071

Sub-Station, Ellbridge, Hatt, Saltash, Cornwall. Tel.: Saltash 2153

H. J. Eaton, N.D.H., *Director*

Stockbridge House Experimental Horticulture Station

Cawood, Selby, Yorks., W.R. Tel.: Cawood 275/6

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National Fruit Trials Experimental Station

Brogdale Farm, Faversham, Kent. Tel.: Faversham 2263

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P. J. Bunyan, B.Sc., Ph.D., A.R.I.C.: biochemistry of organo-phosphorus insecticides

J. M. G. Gradidge, B.Sc., D.I.C., A.R.C.S.: contact insecticides against storage pests

D. S. Papworth, M.Sc., F.R.I.C.: safe use of pesticides

A. Taylor, A.R.I.C.: pesticide biochemistry and analyses

R. H. Thompson, B.Sc., A.R.C.S., A.R.I.C., D.I.C.: fumigants and contact insecticides

N. F. Wood, M.Sc., Ph.D.: metabolites of organo-chlorine insecticides

Entomology

J. A. Freeman, B.Sc., Ph.D., A.R.C.S., F.I.Biol., *Head of Department*

G. A. Brett, B.Sc., A.R.I.C., D.I.C.: stored products entomologist

Miss G. C. Williams, B.Sc., D.I.C.: field control of storage pests

Rodent Research

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R. A. Davis, M.Sc., D.I.C., A.R.C.S.: control of the coypu

D. C. Drummond, B.Sc., M.S.: rat control

J. Greaves, B.Sc.: rat control

F. P. Rowe, B.Sc.: control of the house mouse

K. D. Taylor, B.Sc.: mammal pests control

FIELD RESEARCH STATION

Tangley Place, Worplesdon, Surrey. Tel.: Worplesdon 2581

Land Pests and Birds Research

H. V. Thompson, B.Sc., *Head of Department*

T. Brough, B.Sc.: ornithologist

H. G. Lloyd, B.Sc.: research on rabbits and foxes

A. R. Mead-Briggs, B.Sc., Ph.D.: rabbit flea investigations

R. K. Murton, B.Sc., Ph.D.: ornithologist

E. N. Wright, B.Sc.: ornithologist

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Mrs. M. T. Armstrong, B.Sc., D.I.C.: field control of storage pests

E. G. Hill, B.Sc.: chemical aspects of practical use of pesticides

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G. Slavin, M.R.C.V.S., Dr.Med.Vet.(Leipzig), *Head of Department*: bacteriology; leptospirosis; Q fever; disinfectants

J. A. Beech, B.Sc., M.R.C.V.S.: epidemiology; control mastitis on farms

K. J. Birn, Dr.Med.Vet.(Berne): acid fast bacteriology; tuberculosis

W. A. Coats, M.R.C.V.S.: mastitis

G. A. Cullen, B.Vet.Med., M.R.C.V.S.: epidemiology; experimental mastitis

D. Forbes, B.V.M.S., M.R.C.V.S.: epidemiology; experimental mastitis

W. J. Sojka, M.R.C.V.S.: Enterobacteriaceae; *Salmonella*; *E. coli*

C. D. Wilson, M.R.C.V.S.: epidemiology; control mastitis on farms

Biochemistry

M. L. Burdin, O.B.E., B.Sc., M.R.C.V.S., A.R.I.C., *Head of Department* (seconded to E.A.V.R.O.): toxicology; radio-active isotopes; endocrinology

Mrs. R. Allcroft, O.B.E., D.Sc., Ph.D.: metabolic disorders; fluorosis; trace element deficiencies

W. M. Allen, B.V.Sc., M.R.C.V.S.: chemical pathology

P. H. Anderson, B.Sc., B.Vet.Med., M.R.C.V.S.: toxicology

N. F. Cunningham, Ph.D., B.Sc., A.R.I.C.: endocrinology

S. F. M. Davies, B.A., B.Sc., M.R.C.V.S.: toxicology

I. W. Lesslie, B.V.Sc.(Syd.), M.R.C.V.S.: tuberculin

Miss G. Lewis, B.Sc.: metabolic disorders; trace element deficiencies

Miss A. I. Littlejohn, B.V.Sc., M.R.C.V.S.: metabolic disorders; trace element deficiencies

M. K. Lloyd, B.V.Sc., M.R.C.V.S.: radio-isotopes; immunology

A. F. Machin, B.Sc.: toxicology

D. S. Patterson, Ph.D., M.Sc., F.R.I.C.: chemical pathology

N. S. Saba, B.A.: endocrinology

Biological Products and Standards

E. C. Hulse, B.Sc., M.R.C.V.S., *Head of Department*: vaccine and media production; international biological standards; national control of therapeutic substances

R. B. A. Carnaghan, M.R.C.V.S.: national control of therapeutic substances; aflatoxicosis

I. Davidson, B.Sc., M.R.C.V.S.: international biological standards

P. A. F. O'Neill, B.V.Sc., M.R.C.V.S.: production and performance M.D. pigs

Miss D. L. Stewart, B.Sc.: international biological standards

P. D. Thomson, M.R.C.V.S.: anaerobes; anthrax, and swine erysipelas

Common Services

M. E. Hugh-Jones, M.A., Vet.M.B., M.R.C.V.S., M.P.H.

J. Smith, B.Sc., M.R.C.V.S.

UNITED KINGDOM

Diseases of Breeding

- J. R. Lawson, M.R.C.V.S., *Head of Department*: diseases of breeding
R. D. Lapraik, M.R.C.V.S., D.V.S.M.: brucellosis
D. J. MacKinnon, B.Sc., M.R.C.V.S.: vibriosis; brucellosis
P. G. Millar, M.R.C.V.S.: infertility (general); artificial insemination of turkeys
W. J. Brinley Morgan, B.V.Sc., Ph.D., M.R.C.V.S., Dip.Bact.(Vict.): brucellosis

Parasitology

- S. B. Kendall, B.Sc., Ph.D., M.R.C.V.S., A.R.C.S., *Head of Department*: parasitology
P. K. C. Austwick, B.Sc.: mycology
T. E. Gibson, D.V.Sc., F.R.C.V.S.: nematology of sheep
Miss H. E. Hein, Ph.D., B.V.M.S., M.R.C.V.S.: protozoology
L. P. Joyner, B.Sc., Ph.D.: protozoology
J. F. Michel, M.A., Dip.Agr.Sc.: nematodes of cattle
C. B. Ollerenshaw, B.Sc., Ph.D.: fascioliasis
G. A. Pepin, B.Sc.: mycology
D. D. Pout, B.A., B.Vet.Med., M.R.C.V.S.: protozoology
J. H. Rose, B.Sc., Ph.D.: systematics of nematodes; bionomics of nematode larvae
I. J. B. Sinclair, B.Sc., Ph.D.: serology of nematode infections

Pathology

- N. H. Hole, B.Sc., M.R.C.V.S., *Head of Department*: pathology; Johne's disease
J. T. Done, B.V.Sc., M.R.C.V.S.: pig pathology
J. D. J. Harding, B.V.Sc., M.R.C.V.S., D.V.S.M.: pig pathology
L. M. Markson, M.R.C.V.S.: pathology of sheep and cattle diseases
S. Terlecki, Dr.Vet.Med. (Bologna), M.R.C.V.S.: sheep pathology
D. C. Thurley, B.Vet.Med., M.R.C.V.S.: pig pathology

Poultry

- H. N. Spears, M.R.C.V.S., *Head of Department*: poultry diseases
W. H. Allan, B.V.M.S., M.R.C.V.S.: Newcastle disease
F. D. Asplin, M.R.C.V.S., Dip.Bact.(Vict.): duck virus hepatitis
E. Boughton, B.V.M.S., M.R.C.V.S.
J. T. Faragher, B.V.Sc.(Q'ld.), M.R.C.V.S., Dip.Bact.: poultry diseases (general)
B. S. Hanson, M.R.C.V.S.: poultry disease diagnosis and general
O. Y. Mayor, M.R.C.V.S.: poultry diseases (general); histopathology
D. H. Roberts, B.V.M.S., D.V.M., M.R.C.V.S., Dip.Bact.: respiratory diseases
G. B. Simmins, O.B.E., M.R.C.V.S., D.V.S.M.: Newcastle disease

Virology

- P. Stuart, B.Sc., M.R.C.V.S., *Head of Department*: virus diseases
Miss S. F. Cartwright, B.Sc.: enteroviruses and infertility viruses of pigs
E. Cocks, M.R.C.V.S.: transmissible gastroenteritis of pigs
J. H. Darbyshire, B.Sc., Ph.D., M.R.C.V.S.: respiratory viruses of cattle; swine fever
P. S. Dawson, B.Sc., B.V.M.S., M.R.C.V.S.: respiratory viruses of cattle
R. A. Huck, B.Sc., M.R.C.V.S.: enteroviruses and infertility viruses of cattle
P. H. Lamont, Ph.D., B.Sc., M.R.C.V.S.: respiratory viruses of cattle
J. I. H. Phillip, B.V.Sc., M.R.C.V.S.: electron microscopy

VETERINARY LABORATORY (LASSWADE)

- Eskgrove, Lasswade, Midlothian. Tel.: Lasswade 2025
J. E. Wilson, D.V.M. & S., B.Sc., M.R.C.V.S., F.R.S.E., *Head of Laboratory*: poultry disease

UNITED KINGDOM

- G. Christie, B.Sc., M.R.C.V.S.: poultry disease; *E. coli*
R. H. Duff, M.R.C.V.S.: poultry disease (general); mycoplasmosis
J. W. Macdonald, B.V.M.S., M.R.C.V.S.: poultry disease (general); mortality in wild birds
D. H. McLeod, B.Sc.Agr.: poultry disease; tissue culture
D. A. McMartin, Ph.D., B.V.M.S., M.R.C.V.S.: respiratory poultry diseases

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R. M. Gambles, M.A., B.Sc., M.R.C.V.S.: bacteriology
I. B. Munro, M.Sc., M.R.C.V.S.: artificial insemination and infertility (cattle)
C. O'Hagan, M.R.C.V.S.: artificial insemination (pigs)

OTHER SCIENTIFIC STAFF

- D. T. Michael, M.R.C.V.S., D.V.S.M.(Vict.), N.D.D.: *Assistant Veterinary Investigation Officer*: special field studies on sheep diseases

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D. F. Lee, B.Sc.: pesticides residue analysis
G. A. Lloyd: hazards in the use of pesticides
E. A. Riley, B.Sc., Ph.D., D.I.C.: approval of pesticides for biological efficiency

UNITED KINGDOM

- N. A. Smart, M.A., Ph.D.: analytical methods for pesticides residues
G. Stell, B.Sc.: biological efficiency of insecticides and fungicides

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P. Aitkenhead, B.Sc.: non-indigenous pests
C. R. B. Baker, M.A.: biology and climatology of non-indigenous pests
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Miss M. Gratwick, M.Sc., D.I.C.: publications on pests of crop plants
J. F. Southey, M.A.: plant nematology
A. H. Strickland, M.A., A.I.C.T.A.: pest damage assessment and rational use of pesticides
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W. C. James, B.Sc., Ph.D.: disease assessment
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Miss F. J. Moore, B.Sc., Ph.D.: disease assessment

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W. R. Stanton, B.Sc., Ph.D.: biomodification
Mrs. A. J. Wallbridge, B.Sc., M.I.Biol.: microbiology
B. E. Grimwood, B.Sc., Ph.D., A.R.I.C.: food preservation

DEPARTMENT (D)

F. J. Hall, F.R.I.C., *Assistant Director*
L. J. Beer: engineering common services
L. J. Flaws, M.Inst.F.: waste products utilization
G. B. Pickering, M.A., B.Sc., D.Phil., A.R.I.C.: publications and reports
H. E. Thrupp, A.L.A.: library and technical index
Miss V. Clarke, B.Sc.: technical index
L. H. Greenwood-Barton, B.Sc., F.R.I.C., F.R.S.H.: training, public relations and Caribbean

At Homewood Park, Sutton Lane, Langley, Bucks. Tel.: Slough 41251

S. Weerasekera, B.Sc.Eng., A.M.I.Mech.E.: industrial engineering and process development

C. C. Noaks, A.R.I.C.: industrial engineering and process development

BARBADOS

J. Nabney, B.Sc., Ph.D., *Caribbean Liaison Officer*

Tropical Stored Products Centre

London Road, Slough, Bucks. Tel.: Slough 21295

D. W. Hall, B.Sc., Ph.D., *Director*
F. N. Wright, M.A., *Deputy Director*
P. E. Wheatley, B.Sc., A.R.C.S., *Assistant Director (Research)*
T. G. Amos, B.Sc., Ph.D., *Scientific Officer*: effect of temperature and humidity on behaviour of pests
F. Ashman, B.Sc., *Experimental Officer*: methods of inspecting produce to determine quality
Mrs. S. M. Blatchford, B.Sc., *Literature Survey Officer*
R. D. Coveney, B.Sc., *Experimental Officer*: packaging problems
P. H. Giles, B.Sc., *Senior Scientific Officer*: surveys and research on drying and storage in overseas countries
W. M. Graham, B.Sc., Ph.D., *Senior Scientific Officer*: studies on infestation distribution under field conditions
A. H. Harris, *Experimental Officer*: fumigants and other insecticides
P. I. Jobber, B.Sc., *Scientific Officer*: surveys and research on drying and storage in overseas countries
J. A. McFarlane, B.Sc., *Senior Scientific Officer*: surveys and research on drying and storage in overseas countries
P. J. Mackay, *Experimental Officer*: measurement of physical factors

- G. E. Morley, B.Sc., *Senior Scientific Officer*: surveys and research on drying and storage in overseas countries
 E. T. O'Dowd, *Experimental Officer*: development of plastics containers
 P. M. Patto, *Experimental Officer*: determination of insecticidal residues
 P. F. Prevett, B.Sc., D.I.C., *Senior Scientific Officer*: studies on beetles and moth pests with particular reference to legumes and rice
 D. L. Proctor, B.Sc., *Scientific Officer*: survey and research on storage in overseas countries

HOME BASE SERVICE

The Ministry of Overseas Development is arranging for the professional establishments of certain Government Departments, Universities, Research Institutions and other appropriate organizations in the United Kingdom to be increased so that they can release an equivalent number of qualified staff at any time to work abroad under the sponsorship of this Ministry. The primary object of this scheme is to enable entomologists, plant pathologists, stored products specialists, pesticide chemists, soil scientists and other specialists in agriculture, forestry and animal health to be available to undertake essential investigations in developing Commonwealth countries, both dependent and independent, lacking the necessary qualified staff.

DIRECTORATE OF OVERSEAS SURVEYS

Land Resources Division

Tolworth Tower, Surbiton, Surrey. Tel.: 01-399-5281

The Division, which has now absorbed the Pool of Soil Scientists, carries out investigations of land resources for overseas governments, and makes recommendations about their development. The members of the Division work within the disciplines of agriculture, climatology, ecology, forestry, geology, geomorphology, and soil science. Much of this work is integrated in the form of regional land resource surveys, and is carried out as part of the Ministry of Overseas Development technical assistance programme.

- P. C. Chambers, C.B.E., B.A., *Deputy Director in charge of Division*: tropical agriculture
 M. A. Brunt, M.A.: ecology and land use
 T. I. Rees, B.Sc.: forest appraisal
 J. K. Coulter, B.Sc.: tropical soils liaison work and pedology
 M. G. Bawden, M.A., M.Sc.: geology and geomorphology
 D. M. Carroll, B.Sc.: pedology
 J. R. F. Hansell, B.Sc.: pedology
 I. D. Hill, B.A., M.Sc.: pedology
 R. N. Jenkin, B.Sc.: pedology and soil chemistry
 M. S. Johnson, B.Sc.: forest appraisal
 A. J. B. Mitchell, B.Sc.: pedology
 A. B. Rains, B.Sc.: pasture appraisal
 A. R. Stobbs, B.Sc.: pedology
 P. Tuley, M.B.E., B.Sc.: agricultural botany
 D. M. Lang, B.Sc.: pedology
 W. J. Howard, B.Sc.: forest appraisal

MINISTRY OF TECHNOLOGY

HEADQUARTERS: Millbank Tower, London, S.W.1. Tel.: Victoria 2255

Forest Products Research Laboratory

Princes Risborough, Aylesbury, Bucks. Tel.: Princes Risborough 101/2

- T. A. Oxley, B.Sc., A.R.C.S., F.I.Biol., A.M.I.Ag.E., *Director*
 D. A. Senior, O.B.E., M.A., Ph.D., M.I.E.E., F.I.W.Sc., *Deputy Director*

UNITED KINGDOM

J. G. Sunley, M.Sc., F.I.W.Sc., *Head of Engineering Division*
E. J. Gibson, B.Sc., Ph.D., A.R.I.C., *Head of Science Division*

CHEMISTRY

R. H. Farmer, B.A., B.Sc., D.Sc.Tech., F.R.I.C., F.I.W.Sc., *Head of Section*
N. J. King, B.Sc., Ph.D.
R. A. Laidlaw, B.Sc., Ph.D.
J. W. W. Morgan, B.Sc., Ph.D., A.R.I.C.
D. F. Packman, B.E.H., F.I.W.Sc.

COMPOSITE WOOD

R. A. G. Knight, B.Sc.Eng., M.I.Mech.E., F.I.W.Sc., *Head of Section*
L. S. Doman, F.I.W.Sc.
R. W. Hudson, A.I.W.Sc.
R. J. Newall, F.I.W.Sc.

ENTOMOLOGY

J. D. Bletchly, T.D., B.A., B.Sc., F.R.E.S., M.I.Biol., F.I.W.Sc., *Head of Section*
J. M. Baker, B.Sc., M.I.Biol.
E. C. Harris, F.R.E.S., F.I.W.Sc.
Miss J. M. Taylor, B.Sc., M.I.Biol., F.I.W.Sc.
M. G. White, M.A., F.R.E.S.

MYCOLOGY

J. G. Savory, B.Sc., M.I.Biol., F.I.W.Sc., *Head of Section*
A. F. Bravery, B.Sc.

SEASONING

W. C. Stevens, M.A., A.M.I.Mech.E., F.I.W.Sc., *Head of Section*
A. J. Comben, B.Sc.
A. R. Dean, F.I.W.Sc.
R. E. Hodge, A.I.Mech.E., F.I.W.Sc.
D. D. Johnston, F.I.W.Sc.
G. H. Pratt, F.I.W.Sc.

TIMBER MECHANICS

W. T. Curry, Dip.Eng., F.I.W.Sc., *Head of Section*
I. I. Barody, Dip. Ing.
G. R. Brock, A.I.W.Sc., D.L.C.
D. T. Fuller, Dip.Tech.Eng., G.I.C.E.
R. F. S. Hearmon, F.Inst.P., F.I.W.Sc.

WOOD PRESERVATION

D. N. R. Smith, F.I.W.Sc., *Head of Section*
A. Eaves, B.Sc.
D. F. Purslow, B.Sc.

WOOD STRUCTURE

E. W. J. Phillips, B.Sc., Ph.D., A.R.C.S., F.I.W.Sc., *Head of Section*
J. D. Brazier, B.Sc., F.I.W.Sc.
J. M. Dinwoodie, B.Sc., Ph.D., F.I.W.Sc.

WOODWORKING

J. F. S. Carruthers, B.Sc., A.M.I.Mech.E., F.I.W.Sc., *Head of Section*
H. J. Endersby, F.I.W.Sc.
R. Goodchild, A.I.W.Sc.
D. E. Montague, M.A., G.I.Mech.E.

UNIVERSITIES

Proposed UNIVERSITY OF BATH

(currently Bristol College of Science and Technology)

Claverton Down, Bath. Tel.: Bath 6941

School of Biological Sciences

- L. Broadbent, D.Sc., Ph.D., F.I.Biol., *Professor*: plant virus disease epidemiology, plant pathogenesis
- R. G. Board, B.Sc., Ph.D., M.I.F.S.T.: cytology of *Microbacterium thermosphaetum*; influence of temperature and iron on micro-organisms on the shell membrane of the hen's egg
- R. V. Brunt, B.Sc., Ph.D.: metabolic studies with mono-fluoroacetic acid; metabolic studies with fluorocarbohydrates
- T. D. H. Catchpool, B.Sc., M.I.Biol.: growth substance changes during bolting of lettuces
- R. C. Codner, B.Sc., M.I.Biol.: taxonomy of the form genus *Cephalosporium* (*Moniliales*); microbiological breakdown of citrus fruit tissues
- D. W. Duthie, M.A., B.Sc., Ph.D., F.R.I.C.: trace elements in relation to pathogenesis
- I. D. Firman, B.Sc., Dip.Agr.Sc., D.T.A., M.I.Biol.: effect of phyllosphere organisms on plant pathogens
- V. W. Fowler, B.Sc., A.R.C.S., M.I.Biol.: biology of *Otiorrhynchus* spp. (Curculionidae; Coleoptera)
- A. J. P. Goodchild, B.Sc., D.I.C., M.I.Biol.: parasitology and histopathology of wild birds and fishes
- M. W. Hardisty, M.Sc., M.I.Biol.: endocrinology, especially the structure and functions of the pituitary; reproductive physiology; biology and physiology of lampreys
- L. Jacobs, M.Sc., Ph.D., M.I.Biol.: mechanism of initiation of sporophore of *Psalliota bispora*; role of thermophilic aerobes in compost production; biology, epidemiology and control of *Verticillium malthousei* and *Mycogone perniciosa*
- L. W. Robinson, B.Sc., Ph.D., M.I.Biol.: nutritional and morphogenetic studies of root and leaf tissue cultures
- H. F. Steedman, B.Sc., Ph.D., M.I.Biol.: histological techniques; preservation of tissues
- R. J. Stephens, B.Sc.: persistence of herbicides in the soil
- B. J. R. Taylor, B.Sc., Ph.D., M.I.Biol.: development of new statistical techniques; physiology of lampreys
- N. F. Taylor, M.A., D.Phil., A.R.I.C.: synthesis of fluorinated natural products; synthesis and reactivity of unsaturated carbohydrates; metabolic studies with fluorocarbohydrates

UNIVERSITY OF BRISTOL

The Senate House, Tyndall Avenue, Bristol, 2. Tel.: 24161

AGRICULTURE AND HORTICULTURE

Research Station, Long Ashton, near Bristol. Tel.: Long Ashton 2181
See State-Aided Research Institutes, page 76

BOTANY

- E. W. Yemm, B.A., D.Phil., *Professor of Botany*
Miss Lilian E. Hawker, D.Sc., Ph.D., *Professor of Mycology*

UNITED KINGDOM

ECONOMICS

- J. A. C. Brown, M.A., *Professor of Econometrics*
R. C. Tress, B.Sc.Econ., *Professor of Political Economy*
S. R. Wragg, M.A., *Senior Lecturer in Agricultural Economics in charge of Bristol Province*

VETERINARY RESEARCH

Animal Husbandry

- T. K. Ewer, B.V.Sc., Ph.D., H.D.A., M.R.C.V.S., *Professor*
M. W. H. Bishop, M.A., Ph.D., *Lecturer: reproductive physiology*
M. J. Manners, M.Sc.Agr., Ph.D., N.D.A., *Lecturer: digestion in the piglet*

Clinical Pathology (Veterinary)

- R. H. Johnson, B.V.Sc., M.R.C.V.S., *Lecturer: virology*

Veterinary Anatomy

- C. W. Ottaway, Ph.D., F.R.C.V.S., *Professor*

Veterinary Medicine

- C. S. Grunsell, Ph.D., M.R.C.V.S., *Professor*
J. R. Holmes, M.V.Sc., Ph.D., M.R.C.V.S., *Senior Lecturer: electrocardiography*
R. H. C. Penny, B.V.Sc., Ph.D., M.R.C.V.S., *Senior Lecturer: erythropoiesis*

Veterinary Physiology

- A. Carlyle, B.A., B.V.Sc., M.R.C.V.S., *Senior Lecturer: ovulation of the rat*

Veterinary Surgery

- A. Messervy, M.Sc., M.R.C.V.S., *Professor*
J. S. E. David, B.V.Sc., Ph.D., M.R.C.V.S., *Lecturer: bovine infertility*
Miss Barbara M.Q. Weaver, Ph.D., M.R.C.V.S., *Senior Lecturer: anaesthesia*

ZOOLOGY

- G. M. Hughes, M.A., Ph.D., *Professor of Zoology*
H. E. Hinton, Sc.D., F.R.S., *Professor of Entomology*
R. Bassindale, M.Sc., *Senior Lecturer in Zoology*
H. D. Crofton, B.Sc., Ph.D., *Reader in Parasitology*

CAMBRIDGE UNIVERSITY

School of Agriculture

- Downing Street, Cambridge. Tel.: Cambridge 58381
Sir J. B. Hutchinson, C.M.G., Sc.D., F.R.S., *Drapers' Professor of Agriculture*

Readers

- E. C. Childs, Sc.D.: soil physics
F. Hanley, O.B.E., M.A., *Director of Advanced Students: crop husbandry*

University Lecturers

- M. B. Barker, M.A.: agricultural implements and machinery
R. C. Campbell, Ph.D.: statistics
K. J. Carpenter, Ph.D.: animal nutrition
J. Hammond, M.A.: agricultural zoology and physiology
P. H. Lowings, M.A., Ph.D.(Belf.): agricultural mycology
E. L. Miller, Ph.D.: animal nutrition
D. G. Morgan, M.A., M.Sc.(Wales): agricultural botany
J. B. Owen, Ph.D.(Wales): animal husbandry

R. M. S. Perrin, Ph.D.: soil chemistry
C. R. Ribbands, Sc.D.: agricultural entomology
W. J. Ridgman, M.A.: field experimentation
D. B. Wallace, M.A.: history and economics of agriculture

H. T. Tribe, M.A., Ph.D., *Assistant Director of Research*: soil microbiology

University Demonstrators

W. C. Block, B.Sc., Ph.D. (Dunelm): agricultural entomology
M. J. Chadwick, M.A., Ph.D. (Wales): agricultural botany
A. W. Flegmann, M.Sc. (Bud.): pedology
H. J. Harvey, B.Sc. (R'dg.): agricultural botany
R. M. Holmes, Ph.D.: animal physiology
D. W. Jewett, M.Sc. (Dunelm): agricultural engineering
D. A. MacLeod, M.Sc.: pedology
D. Wilman, M.A., Ph.D. (Leeds): agriculture

Senior Assistant in Research

J. R. Morton, M.A., Ph.D.: animal genetics

A. J. Brookes, M.A., *Director, University Farm*

Farm Economics Branch

F. G. Sturrock, M.A., *Director*
G. B. Aneuryn Evans, M.A.
C. S. Barnard, M.A.
A. M. M. McFarquhar, M.A., Ph.D.

Other Research Staff

M. J. Blackwell, M.A., seconded from the Meteorological Office: meteorology

School of Veterinary Medicine

Madingley Road, Cambridge. Tel.: Cambridge 55641

ANIMAL PATHOLOGY

W. I. B. Beveridge, D.V.Sc.(Syd.), M.A., *Professor of Animal Pathology and Head of Department*: virus diseases of domestic animals

University Lecturers

S. F. Barnett, M.A., Ph.D., B.Sc., M.R.C.V.S.: tick bionomics and protozoal infections
A. R. Jennings, D.V.Sc., M.A., M.R.C.V.S.: diseases of domestic animals and comparative pathology
P. Whittlestone, M.A., Ph.D., B.Sc., M.R.C.V.S.: respiratory diseases of pigs
A. A. Wilson, M.A., M.V.Sc., M.R.C.V.S.: metabolism of magnesium and calcium; renal function in animals and their relation to metabolic disorders

Assistant Directors of Research

H. P. Chu, Ph.D., B.Sc.(China): respiratory diseases of poultry
S. D. Elliott, M.A., M.B., B.Sc., M.D., D.P.H.: streptococcal infections in animals

University Demonstrator

R. M. Connan, M.A., Ph.D., B.Vet.Med., M.R.C.V.S.: helminth diseases of domestic animals

UNITED KINGDOM

Scientific Worker

Mrs. E. Orlans, Ph.D., B.S., M.S.: immunology; characterization of fowl antibodies

VETERINARY CLINICAL STUDIES

A. T. Phillipson, M.A., Ph.D., D.V.Sc., F.R.S.E., M.R.C.V.S., *Professor of Veterinary Clinical Studies and Head of Department*: physiology of ruminants

University Readers

J. Hickman, M.A., M.R.C.V.S., *Reader in Animal Surgery*: effects of radiotherapy on periosteal proliferation and the process of regeneration of articular cartilage
T. R. R. Mann, C.B.E., M.D., Sc.D., Ph.D., F.R.S., *Reader in the Physiology of Animal Reproduction*: physiology and biochemistry of reproduction

University Lecturers

J. T. Abrams, M.A., M.Sc., Ph.D.: low protein diets of adult dogs; growth of the rat on diets of high fat content
P. S. Bridge, M.A., B.Sc., M.R.C.V.S., D.V.S.M.: vitamin A deficiency in calves; feeding milled rations to dairy cows
S. F. Douglas, M.A., M.R.C.V.S.: radiological procedures; general diseases of small animals
R. F. W. Goodwin, M.A., Ph.D., B.Sc., M.R.C.V.S.: pathology of the pig with special reference to respiratory diseases; general medicine of the pig
L. W. Hall, M.A., B.Sc., Ph.D., M.R.C.V.S.: clinical anaesthesia
M. C. G. Littlewort, M.A., B.Sc., M.R.C.V.S.: diastolic extra-sounds in the horse's heart
E. T. Rees Evans, M.A., B.Sc., M.R.C.V.S.: haematology and haemalytic anaemias; in vitro response of lymphocytes to antigens
D. W. B. Sainsbury, M.A., B.Sc., Ph.D., M.R.C.V.S.: environmental and housing needs of livestock, including poultry
R. V. Short, M.Sc., Ph.D., M.R.C.V.S.: study of steroid hormones
F. R. Spratling, M.A., M.R.C.V.S.: experimental hypovitaminosis A in the calf; therapy of paratuberculosis
P. D. Storie Pugh, M.B.E., M.C., T.D., M.A., Ph.D., M.R.C.V.S., A.R.I.C.: sheep diseases
R. G. Walker, M.A., M.R.C.V.S.: arterial surgery; canine prostate

Assistant Directors of Research

Miss J. Keilin, M.A., Ph.D.: chemistry of haemoglobins and haematin compounds
A. C. Palmer, M.A., Ph.D., M.R.C.V.S.: nervous diseases of animals

University Demonstrator

G. W. Osbaldiston, B.V.Sc., M.R.C.V.S.: renal physiology of dogs and chickens

University Assistant Surgeon to the Veterinary School

L. N. Owen, M.A., B.V.Sc., F.R.C.V.S.: neoplasma especially osteo-sarcomata

Scientific Workers

K. C. Barnett, B.Sc., Ph.D., M.R.C.V.S.: veterinary ophthalmology
D. L. Doxey, B.V.M.S., Ph.D., M.R.C.V.S.: *in vitro* response of lymphocytes to antigens

A.R.C. Unit of Insect Physiology, see page 20

A.R.C. Unit of Reproductive Physiology and Biochemistry, see page 21

A.R.C. Unit of Soil Physics, see page 22

A.R.C. Statistics Group, see page 22

UNIVERSITY OF DURHAM

Durham. Tel.: Durham 3541

BOTANY

- D. H. Valentine, M.A., Ph.D. (Cantab.), F.L.S., *Professor of Botany*: experimental taxonomy of flowering plants
- J. L. Crosby, M.A., Ph.D. (Cantab.), *Reader in Genetics*: population genetics of outbreeding systems, especially *Primula* and *Campanula*; computer simulation of genetic systems and evolutionary processes
- G. H. Banbury, B.Sc. (Lond.), F.L.S.: bioelectric potentials, growth regulation, tropisms and translocation, especially in fungi; ultrastructural aspects of these phenomena studied by electron microscopy
- Miss P. Watson, B.Sc., Ph.D. (Lond.): ecology and physiology of fungi
- D. J. Bellamy, B.Sc. (Lond.), F.L.S.: ecological physiology of mire and salt marsh plants; energetics of mire communities and hydrology of mire systems
- B. A. Whitton, M.A. (Oxon.), Ph.D. (Lond.): biochemistry and ecology of blue-green algae; river pollution and the growth of *Cladophora*
- Miss J. Turner, B.Sc. (Lond.), M.A., Ph.D. (Cantab.): history of forest clearance and prehistoric land utilization as indicated by pollen analysis

UNIVERSITY OF EAST ANGLIA

Earlham Hall, Norwich, NOR 88C. Tel.: Norwich 52651

School of Biological Sciences

University Village, Wilberforce Road, Norwich, NOR 77H

T. A. Bennet-Clark, C.B.E., M.A., Ph.D., F.R.S., *Dean*

BIOCHEMISTRY

- D. D. Davies, B.Sc., Ph.D., *Professor*: control mechanisms of plant growth
- A. Coddington, B.Sc., Ph.D.: gene action and protein structure
- C. Greenwood, B.Sc., Ph.D.: special methods in enzymology
- M. J. Selwyn, M.A., Ph.D.: enzyme kinetics

BIOPHYSICS

- J. Dainty, M.A., D.Sc., *Professor*: transport of ions and water in plant cells and tissues
- D. Aikman, B.Sc.: ionic relations of marine algae
- P. C. Croghan, M.A., Ph.D.: osmotic relations in animals
- R. T. Joy, M.Sc., Ph.D.: nerve ultrastructure

BOTANY

- T. A. Bennet-Clark, C.B.E., M.A., Ph.D., F.R.S., *Professor*: chromatographic analysis of plant hormones in relation to growth and tropisms
- I. Gibson, B.Sc., Ph.D.: gene action in *Paramecium*: cytoplasmic inheritance in *epilobium*
- R. L. Jeffries, B.Sc., Ph.D.: ionic relations of liverworts; factors affecting distribution of maritime and paramaritime plants
- B. G. Lewis, B.Sc., Ph.D.: physiological aspects of plant infection
- M. B. Wilkins, B.Sc., Ph.D., *Professor*: mechanism of tropic responses; photo-morphogenesis; transport of growth hormones; mechanism of geoelectric effects

ZOOLOGY

- J. A. Kitching, O.B.E., M.A., Ph.D., Sc.D., F.R.S., *Professor*: fine structure and physiology of protozoa; effects of high hydrostatic pressures and gamma-irradiation; marine coastal ecology

UNITED KINGDOM

- G. C. Kearn, B.Sc., Ph.D.: biology of monogen parasites of fishes
J. Noble-Nesbitt, M.A., Ph.D.: physiology and ultrastructure of insects, especially *Apterygota*
G. Shelton, M.A., Ph.D.: comparative physiology of respiratory and circulatory systems; nervous control of breathing

UNIVERSITY OF EXETER

Northcote House, The Queen's Drive, Exeter. Tel.: 77911

BOTANY

- J. Caldwell, D.Sc., Ph.D. (Glas.), Ph.D. (Cantab.), *Professor*: virus diseases of plants
D. Pitt, B.Sc., Ph.D. (Birm.): mycology
S. M. Robb, B.Sc. (Aberd.): virus diseases of plants
S. A. J. Tarr, D.Sc., Ph.D. (Lond.): plant pathology

ZOOLOGY

- L. A. Harvey, M.Sc., *Head of Department*
C. R. Kennedy, Ph.D., *Asst. Lecturer*: host/parasite relations among helminths
I. J. Linn, B.Sc., *Lecturer*: ecology and behaviour of small mammals
G. G. Vickers, M.Sc., *Lecturer*: energy flow in grass- and heath-land communities
P. J. Walker, Ph.D., *Lecturer*: host/parasite relations among protozoa

ECONOMICS (AGRICULTURAL ECONOMICS)

Exeter Province, 1, Courtenay Park, Newton Abbot. Tel.: Newton Abbott 3711

Research and advisory work in agricultural economics within the province and participation in national investigations required by the Ministry of Agriculture, Fisheries and Food. Research studies—farm organization and management; the economics of farm enterprises with special emphasis on milk, pigs and the grass crop; capital labour in farming; economic and social studies of problem areas; scale in farming with particular reference to the problems of small farms and farm size structure; agricultural development with special reference to the role of agriculture in the economy of South West England.

- S. T. Morris, M.Sc. (Wales), *Senior Lecturer in Agricultural Economics and Provincial Agricultural Economist i/c Exeter Province of Provincial Agricultural Economics Service*
V. H. Beynon, B.Sc.Agr.Econ. (Wales)
Miss H. M. Cole, B.Sc.Econ. (Lond.)
E. T. Davies, B.Sc.Agr. (Wales)
G. D. D. Davies, B.Sc.Agr.Econ. (Wales)
W. J. Dunford, B.Sc.Econ. (Lond.)
B. E. Hill, M.Sc. (Lond.)
J. A. Langley, M.Sc.Agr. (Lond.)
H. W. B. Luxton, B.Sc.Agr. (Lond.), Dip.Agr.Econ.
R. C. Rickard, B.Sc.Econ. (Lond.)

UNIVERSITY OF HULL

Hull. Tel.: OHU2 408960

BIOCHEMISTRY

- E. A. Dawes, Ph.D., D.Sc. (Leeds), F.R.I.C., *Reckitt Professor of Biochemistry*: metabolism of plant pathogen *Erwinia amylovora* and soil micro-organisms
P. J. Chapman, B.Sc., Ph.D. (Leeds): metabolism of alicyclic and aromatic compounds by soil micro-organisms

BOTANY

- N. F. Robertson, B.Sc., Ph.D. (Edin.), M.A. (Cantab.), *Professor of Botany*: plant pathology and analysis of pathogenicity
 D. J. Boatman, B.Sc., Ph.D. (Lond.), M.A. (Dub.): problems in soil chemistry; the nutrition of vegetation in impoverished areas
 L. Bowering, B.Sc. (Lond.): experimental taxonomy
 J. R. Coley-Smith, B.Sc., Ph.D. (Birm.): plant pathology; germination of sclerotia
 B. T. Cromwell, B.Sc., Ph.D. (Liv.), *Reader in Plant Physiology*: alkaloid biosynthesis; amines in plants
 M. B. Dale, B.Sc., Ph.D. (Soton.): numerical analysis of vegetation
 J. Friend, B.Sc., Ph.D. (Liv.), Ph.D. (Cantab.): carotenoids; problems in photosynthesis; plastoquinones
 A. Harrison, B.Sc., Ph.D. (Dunelm): tissue culture physiology
 A. Peel, B.Sc., Ph.D. (Nott.): phloem transport
 P. Whittaker, B.Sc., Ph.D. (Leic.): biochemistry cytochrome systems; microbial genetics

ZOOLOGY

- G. Goldspink, B.Sc. (Hull), Ph.D. (Dub.): growth and development of mammalian striated muscle
 J. H. Sudd, M.A. (Cantab.), Ph.D. (Lond.): behaviour of ants
 I. C. Williams, B.Sc., Ph.D. (Wales): helminth parasites of wild birds; interactions of digenetic trematode larvae and molluscan hosts; copepod parasites of Redfish, *Sebastes marinus* L.

UNIVERSITY OF KEELE

Keele, Staffordshire. Tel.: Keele Park 371

BIOLOGY

- Miss R. M. Badcock, M.Sc.: insect ecology, especially in aquatic or semi-aquatic habitats
 A. R. Gemmell, Ph.D.: plant pathology: thermophilic fungi
 K. M. Goodway, Ph.D.: applied ecology; weed control

UNIVERSITY OF LANCASTER

Bailrigg House, Lancaster. Tel.: Lancaster 65201

BIOLOGY

- C. D. Pigott, M.A., Ph.D., *Professor*: plant ecology and physiology
 C. Adams, B.A.: osmoregulation
 F. W. Heaton, B.Sc., Ph.D.: mammalian mineral metabolism
 H. Huddart, B.Sc., Ph.D.: neuromuscular physiology
 T. A. Mansfield, B.Sc., Ph.D.: plant stomatal physiology
 G. J. Paxman, M.A., Ph.D.: potato and potato blight genetics

LEEDS UNIVERSITY

Department of Agriculture

The University, Leeds, 2. Tel.: Leeds 31751

- T. L. Bywater, B.Sc. (Wales), M.S. (Wis.), *Professor of Agriculture and Head of the Department*

AGRICULTURE

- T. G. Boaz, M.B.E., M.A., Dip.Agr. (Cantab.): nutrition of the pregnant sow; growth and development of bacon pigs; intensive stocking for fat lamb production; use of K40 gamma ray analysis for lean meat determination in the pig

UNITED KINGDOM

- D. C. Dalton, B.Sc. (Dunelm), Ph.D. (Wales): selection experiments in mice
D. P. Gibbon, B.Sc. (Leeds), M.Sc. (Trin.): plant population and competition for environment resources
D. R. Hodgson, B.Sc., Ph.D. (Leeds), Dip.Agr. (Cantab.): arable and grassland crop; fertilizer relations; growth of trees and shrubs on pulverized fuel ash; the effect of grazing on herbage production
J. Hodgson, B.Sc. (Leeds): liquid and solid food consumption by calves; grassland utilization and grazing ecology
R. Holliday, B.Sc. (Leeds): plant population and competition for environment resources; arable and grassland crop: fertilizer relations and soil profile studies

AGRICULTURAL BACTERIOLOGY

- A. N. Barker, M.Sc., Ph.D. (Leeds): soil microbiology
J. Wolf, M.Sc. (R'dg.): aerobic spore-formers; germination and serology

AGRICULTURAL BOTANY

- J. H. Western, B.Sc., Ph.D. (Wales), *Professor*: diseases of herbage plants
D. J. Harberd, M.Sc. (Wales): genecology of hill grazings
T. F. Preece, B.Sc., M.Sc. (Wales): early stages of infection by plant pathogenic fungi
Miss M. J. Wren, B.Sc., Ph.D. (Manc.): physiology of root growth

AGRICULTURAL CHEMISTRY

- J. A. F. Rook, B.Sc. (Wales), Ph.D. (Glas.), F.R.I.C., *Professor*: ruminant nutrition and milk secretion
E. A. Kirkby, B.Sc. (Dunelm), A.R.I.C.: nitrogen and mineral nutrition of plants
G. H. Smith, B.A. (Cantab.), Ph.D. (Nott.): enzymological studies in relation to animal nutrition
W. N. Townsend, B.Sc. (Leeds): soil-plant nutrient relations

AGRICULTURAL ECONOMICS

- C. J. Black, B.Sc. (Lond.), B.Litt., Dip.Agr.Econ. (Oxon.), N.D.A.: capital in agriculture
M. Black, B.Sc. (Leeds), Dip.Agr.Econ. (Oxon.): economic and social interactions in a rural area
J. B. Butler, M.Sc. (Lond.), M.Com. (Birm.): farm management studies
A. W. Hales, B.Sc. (R'dg.): horticultural management
A. G. Jeffrey, B.Com. (Leeds): planning and control systems for farm businesses
W. H. Long, M.A. (Oxon.): history of agriculture
A. A. Marsh, B.Sc. (R'dg.), Dip.Agr.Econ. (Oxon.): systems of farming—a cartographic approach
I. G. Simpson, M.Sc. (R'dg.): development of agriculture in the Sudan
Mrs. M. C. Simpson, B.Sc.Econ., M.Sc.Agr. (Lond.): marketing in the Sudan
J. W. Wood, B.Sc. (Lond.), M.S.A. (Tor.): economic studies for advisory work
A. J. Wynne, B.Sc. (Lond.), N.D.A.: economics of milk production

AGRICULTURAL ZOOLOGY

- N. H. E. Gibson, B.Sc. (Lond.), Ph.D. (Leeds): insect pathology; ecology of soil arthropods
B. Whittington, B.Sc., Ph.D. (Sheff.): insect pathology; parasitic nematodes

VETERINARY SCIENCE

- J. M. Forbes, B.Sc. (Nott.): factors affecting voluntary food intake in ruminants
K. G. Towers, B.V.Sc. (Liv.), M.R.C.V.S.: fluorosis in domesticated animals; piglet mortality

THE UNIVERSITY OF LIVERPOOL

Brownlow Hill, Liverpool, 3. Tel.: Royal 6022

Faculty of Science

BOTANY

- Prof. N. A. Burges, Ph.D.: soil microbiology; the decomposition of humus and ecological problems in soil mycology
 Prof. V. H. Heywood, Ph.D., D.Sc.: taxonomy of European flora; biosystematics; taxonomic theory
 P. W. Ball, Ph.D.: flora of Europe and cytotaxonomy of *Salicornia*
 D. Boulter, D.Phil.: structure and metabolism of nitrogen compounds of plants
 Mrs. E. M. Burrows, Ph.D.: culture of algae in relation to problems of marine ecology
 C. D. K. Cook, Ph.D.: biosystematics of aquatic flowering plants
 D. A. Coult: gas exchange in aquatic plants
 P. S. Dixon, Ph.D.: cytotaxonomy of red algae
 T. R. G. Gray, Ph.D.: taxonomy of soil bacteria and the use of fluorescence microscopy in bacterial ecology; chitin decomposition
 G. N. Greenhalgh, Ph.D.: taxonomy and biology of the Xylariaceae (especially *Hypoxylon*), with special reference to the imperfect states; Ascus structure
 J. B. Harborne, Ph.D.: chemotaxonomy of higher plants; comparative biochemistry of flavonoid pigments
 K. Hardwick, Ph.D.: physiological and anatomical aspects of plant senescence; relationship between flowering and death in monocarpic plants
 M. Hurst, Ph.D.: metabolism of aromatic compounds by fungi; structure of humic acids
 J. McNeill, Ph.D.: biosystematics of flowering plants; taxonomy of Alsinoideae and Scilloideae
 T. McNeilly: evolution and natural selection in *Plantago* spp.
 J. M. Milton: protein structure; the amino acid sequence of urease
 D. A. Thurman, Ph.D.: electrophoretic studies on proteins of seeds; proteolysis in seeds
 J. H. Walsh, D.Phil.: metabolism of macromolecules by fungi
 S. T. Williams, Ph.D.: taxonomy and ecology of the Actinomycetales

BIOCHEMISTRY

- Vitamin A studies; nutritional work on poultry
 G. A. J. Pitt, B.Sc., Ph.D., A.R.I.C.
 J. N. Thompson, B.Sc., Ph.D.

GENETICS

- P. M. Sheppard, M.A., D.Phil., F.R.S., *Professor of Genetics*: genetics of chickens; human and animal blood groups; resistance to warfarin poisoning in mammals

PARASITOLOGY AND ENTOMOLOGY

- W. Crewe, M.Sc., Ph.D., M.I.Biol.: transmission of *Cysticercus bovis*
 W. W. MacDonald, M.Sc., Ph.D., M.I.Biol.: genetics, mosquito-borne infections

ZOOLOGY

- Prof. R. J. Pumphrey, Ph.D., D.Sc., F.R.S.: comparative physiology
 Mrs. M. M. Penney, Ph.D.: ecology of carabid beetles
 A. W. Meats, B.Sc.: water relations of the *Tipula oleracea* group
 J. C. Chubb, B.Sc., Ph.D., M.I.Biol.: parasites of freshwater fish

UNITED KINGDOM

Faculty of Veterinary Science

ANIMAL HUSBANDRY

- J. O. L. King, B.Sc., M.V.Sc., Ph.D., M.R.C.V.S., *Reader in Animal Husbandry*: the influence of environmental factors and disease on the composition of cow's milk; the mode of action of certain growth-promoting food additives, with particular reference to their effect on the structure of the alimentary canal
- R. Ewbank, B.V.Sc., M.R.C.V.S.: diagnostic tests for sub-clinical mastitis in cows; the effect of cold stress on the development of bovine mastitis; the suckling behaviour of calves and lambs; the social behaviour of pigs
- T. L. J. Lawrence, M.Sc., B.Sc. Agr.: high level cereal diets for growing pigs; the effects of various cereal preparations fed in conjunction with different water levels

VETERINARY ANATOMY

- A. S. King, B.Sc., Ph.D., M.R.C.V.S., *Professor of Veterinary Anatomy*: age changes in intervertebral discs; avian breathing
- G. K. Benson, B.Sc., Ph.D.: hormonal control of lactation
- T. D. Glover, M.A., Ph.D., B.Sc., F.R.C.V.S.: transport and fate of gametes
- R. Lee, B.V.Sc., M.R.C.V.S.: age changes in vertebral column
- J. McLelland, B.V.M.S., M.R.C.V.S.: avian breathing

VETERINARY BIOCHEMISTRY

- M. McC. Barnes, B.Sc., Ph.D.: vitamin E metabolism

VETERINARY CLINICAL STUDIES

- R. J. Fitzpatrick, B.Sc., Ph.D., M.R.C.V.S., *Professor of Veterinary Clinical Studies*: applied physiology of reproduction in farm animals with special reference to endocrinology
- R. G. Dalton, B.V.M.S., Ph.D., M.R.C.V.S.: electrolyte studies in calf diseases
- E. J. H. Ford, M.V.Sc., F.R.C.V.S.: liver function and dysfunction in domesticated animals
- R. S. Jones, B.V.Sc., M.R.C.V.S.: large animal anaesthesia
- J. E. F. Rankin, B.Sc., M.R.C.V.S.: brucellosis

VETERINARY PARASITOLOGY

- A. Q. Awan, B.Sc. (A.H.), M.Sc.: *Trypanosoma vivax* in sheep
- W. N. Beesley, M.Sc., Ph.D., M.I.Biol.: insecticides and parasites of sheep
- M. K. Beg, B.Sc. (A.H.), M.Sc.: *Trypanosoma vivax* in sheep
- M. J. Clarkson, B.Sc., M.V.Sc., Ph.D., M.R.C.V.S.: histomoniasis in turkeys; liver function in birds
- A. Fenwick, M.Sc.: molluscicides

VETERINARY PATHOLOGY AND BACTERIOLOGY

- D. L. Hughes, Ph.D., F.R.C.V.S., Dip.Bact., *Professor of Veterinary Pathology*
- D. Allan, Ph.D., M.R.C.V.S.: pathogenesis of enteric infections in animals and birds
- J. R. Baker, B.V.Sc., Ph.D., M.R.C.V.S.: hypervitaminosis A in the chicken
- J. McC. Howell, B.V.Sc., Ph.D., M.R.C.V.S.: neuropathology; vitamin A and reproduction
- J. Ishmael, B.V.Sc., M.R.C.V.S.: pathology of the spleen in domestic animals; neuropathology
- J. R. Thomlinson, B.Sc., Ph.D., M.R.C.V.S.: pathogenesis of enteric infections in animals and birds
- E. Thorpe, B.V.M.S., D.V.M., M.R.C.V.S.: pathology and histochemistry of liver and intestine

VETERINARY PHARMACOLOGY

A. Knifton, B.V.Sc., B.Sc., Ph.D., M.R.C.V.S.: action of drugs on uterus of pig

VETERINARY PHYSIOLOGY

E. C. Pickering, B.Sc., B.V.M.S., M.R.C.V.S.: studies on renal function in ruminants

A. G. Singleton, B.V.Sc., M.R.C.V.S.: quantitative assessment of digestion in ruminants

VETERINARY PREVENTIVE MEDICINE

E. G. White, Ph.D., D.Sc., F.R.C.V.S., *Professor of Veterinary Preventive Medicine*: urinary calculi

F. T. W. Jordan, B.Sc., Ph.D., F.R.V.S.: respiratory diseases of poultry

G. S. Walton, B.V.Sc., M.R.C.V.S.: hair growth; histopathology of skin; allergic responses

LONDON UNIVERSITY

Bedford College

Regents Park, London, N.W.1. Tel.: Welbeck 5743

BOTANY

Prof. L. J. Audus, M.A., Ph.D., Sc.D. (Cantab.), F.L.S., F.I.Biol.: physiology of root growth with particular reference to the action of plant growth regulators; mechanism of plant growth movements; magnetic fields and plant growth: herbicide behaviour in the soil

Miss L. E. Bentley, B.Sc. (Manc.), Ph.D. (Lond.): acid metabolism

B. W. Ferry, B.Sc., A.R.C.S.: physiology of ectotrophic mycorrhizal fungi, particularly *Boletus spp.* and the "M" factor

M. W. McDonough, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.: bacterial genetics

B. C. Sharman, Ph.D. (Leeds): genetics of wheat species; leaf development in grasses and cereals

D. C. Spanner, Ph.D. (Lond.): translocation of sugars in higher plants; electron microscopy of phloem

L. P. Turnbull, M.Sc. (N.Z.): cryptogamic botany with special reference to algae; physiology of sexual reproduction in algae

S. J. P. Waters, B.A. (Cantab.): mineral nutrition of plants in relation to their ecology, with particular reference to the calcifuge habit

GEOGRAPHY

Prof. M. M. Cole, B.Sc., Ph.D. (Lond.): savanna vegetation; use of vegetation in mineral exploration; investigation of the relationship between plant distribution and the mineral content of soils and bedrock; soil and vegetation studies in the South Pennines

M. J. Eden, M.A. (Oxon.), M.Sc. (McG.): soil-plant-water relations in tropical grasslands; ecology of shifting cultivation in tropics

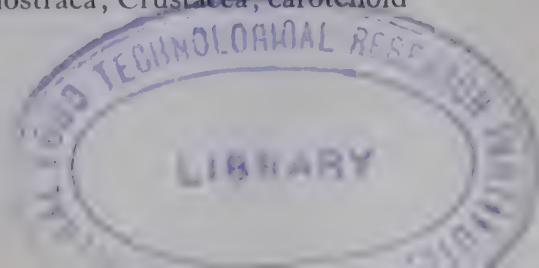
ZOOLOGY

Prof. N. Millott, D.Sc. (Sheff.), Ph.D. (Cantab.): sensitivity to light and associated pigments; invertebrate nervous systems; biochemistry of melanins, carotenoids and naphthaquinones; histochemical studies on echeroderms

J. T.-Y. Chou, D.Phil. (Oxon.): metabolic study of the inner ear

R. P. Dales, Ph.D. (Lond.): respiratory metabolism and biology of polychaetes

Miss B. M. Gilchrist, Ph.D. (Lond.): biology of Anostraca; Crustacea; carotenoid pigments in Crustacea



UNITED KINGDOM

- E. G. Healey, Ph.D. (Lond.), D.Phil. (Munich): pigmentation and colour change in fish; physiology of nervous system in fish
Miss F. E. Ince, M.Sc. (Lond.): developmental studies in molluscs and reptiles

Birkbeck College

Malet Street, London, W.C.1. Tel.: Langham 6622

BOTANY

- C. T. Ingold, D.Sc., *Professor and Head of Department*: spore dispersal in fungi, aquatic fungi
P. J. Casselton, B.Sc., Ph.D.: respiratory metabolism of micro-organisms
J. D. Dodge, B.Sc., Ph.D.: cytology and fine-structure of dinoflagellates
B. E. Plunkett, B.Sc., Ph.D., *Reader*: morphogenesis in fungi
A. G. Smithers, B.Sc.: salt relations of carrot root tissue cultures
M. J. Swift, M.A., Ph.D.: root-infecting fungi and competition of fungi for woody substrates

ZOOLOGY

- W. S. Bullough, D.Sc., *Professor and Head of Department*
R. F. Chapman, B.Sc., Ph.D.: distribution of Orthoptera in relation to feeding behaviour
I. N. Healey, B.Sc., Ph.D.: ecology of soil arthropods, especially apterygotes
T. E. Hughes, M.A., *Reader*: physiology of Acari

Imperial College of Science and Technology

Prince Consort Road, South Kensington, London, S.W.7. Tel.: Kensington 5111

BOTANY

- Prof. W. O. James, M.A., Ph.D., F.R.S.: plant physiology
Prof. C. P. Whittingham, B.A., Ph.D.: plant physiology
Prof. R. K. S. Wood, Ph.D., A.R.C.S., D.I.C.: plant pathology
K. L. Alvin, Ph.D.: palaeobotany
A. H. Dadd, B.Sc., Ph.D., A.R.C.S.: microbiology
D. H. Dalby, B.Sc. Ph.D.: taxonomy
B. J. Deverall, B.Sc., Ph.D., D.I.C.: mycology and plant pathology
J. L. Gay, B.Sc., M.Sc., Ph.D.: microbiology
A. Goldsworthy, B.Sc., Ph.D.: plant physiology
A. D. Greenwood, B.Sc.: analytical cytology
J. W. Hannay, Ph.D.: plant physiology
K. A. Kershaw, Ph.D.: ecology
Miss R. M. Leech, B.A., D.Phil.: analytical cytology
J. F. Levy, B.Sc., A.R.C.S.: timber technology
J. W. Millbank, B.Sc., Ph.D.: microbiology
A. J. Rutter, Ph.D., A.R.C.S.: ecology
R. J. Threlfall, B.Sc., Ph.D., A.R.C.S., D.I.C.: genetics
D. A. Walker, B.Sc., Ph.D.: plant physiology
B. E. J. Wheeler, B.Sc., Ph.D.: plant pathology
F. H. Whitehead, M.A., D.Phil.: experimental taxonomy

BIOCHEMISTRY

- Prof. E. B. Chain, D.Phil., Ph.D., F.R.S.
Mrs. Anne Beloff-Chain, D.Phil., B.Sc.
D. Blond, D.Phil.: neuro chemistry
M. J. Carlile, M.A., Ph.D.: microbiology
Mrs. R. Catanzaro-Quintiliani, M.D.: biochemistry

A. G. F. Dickerson, M.Sc., Ph.D.: biochemistry
 K. R. L. Mansford, M.Sc., F.R.I.C., M.I.Biol.: biochemistry
 P. G. Mantle, Ph.D., A.R.C.S., D.I.C., B.Sc.: plant pathology
 S. P. R. Rose, B.A., Ph.D.: neuro biology
 J. Russell, Ph.D., B.Sc.: biochemistry
 C. E. Stickings, Ph.D., B.Sc.: fungal biochemistry
 R. Thomas, Ph.D., B.Sc.: fungal biochemistry

CHEMISTRY

A. H. Cornfield, Ph.D., A.R.C.S., F.R.I.C.: agricultural chemistry

ZOOLOGY AND APPLIED ENTOMOLOGY

Entomology

Prof. O. W. Richards, D.Sc., F.R.S.: insect ecology and taxonomy
 K. Boratynski, Ph.D.: taxonomy and biology of scale insects
 R. G. Davies, M.Sc.: insect morphology
 H. E. Goto, B.Sc.: taxonomy and biology of *Collembola*
 A. E. H. Higgins, A.R.C.S.: methods of application of insecticides
 C. T. Lewis, Ph.D.: penetration of the insect cuticle; insect sense-organs
 G. Murdie, Ph.D.: insect biometry, especially of aphids
 D. R. P. Murray, Ph.D.: biochemical problems of insect physiology
 J. W. Siddorn, B.Sc.: microclimatology
 T. R. E. Southwood, Ph.D.: biology of Heteroptera; insect ecology
 Miss N. Waloff, Ph.D.: insect ecology
 M. J. Way, M.A.: integration of chemical and biological control of insect pests

Parasitology

Prof. B. G. Peters, M.Sc., Ph.D., Hon. A.R.C.S.: biology and taxonomy of nematodes
 F. Call, Ph.D.: soil fumigation; physiology of eelworms
 Miss E. U. Canning, Ph.D.: protozoa in relation to insect pathology
 N. G. Hague, Ph.D.: biology of plant nematodes
 Miss J. Mahon, Dr.es Sc.: Platyhelminthes

A.R.C. Unit of Plant Physiology, see page 21

King's College

DEPARTMENT OF BOTANY

68 Half Moon Lane, Herne Hill, London, S.E.24. Tel.: Brixton 2600

F. R. Whatley, B.A., Ph.D., *Professor*: photosynthesis
 J. W. Bradbeer, B.Sc., Ph.D., *Reader*: seed dormancy; carbon metabolism
 J. Carpenter, B.A.: genetics of *Drosophila*
 J. W. Cowan, B.Sc., Ph.D.: microbial genetics
 P. B. Gahan, B.Sc., Ph.D.: histochemistry; cell division and differentiation
 D. O. Hall, B.Sc., Ph.D.: chloroplast structure and function
 Mrs. J. E. Keys, B.Sc., Ph.D., D.I.C.: photoperiodism; growth physiology
 G. Metcalfe, M.A., Ph.D.: ecology of micro-organisms
 J. M. Palmer, B.Sc., D.Phil.: mitochondria; metabolism of phosphate
 Miss K. V. Symonds, B.Sc., Ph.D.: soil microbiology

London School of Hygiene and Tropical Medicine

Keppel Street, Gower Street, London, W.C.1. Tel.: Museum 3041

ENTOMOLOGY

D. S. Bertram, D.Sc., Ph.D., *Professor of Medical Entomology*
 J. R. Busvine, D.Sc., Ph.D., *Professor of Entomology (as applied to hygiene)*

UNITED KINGDOM

HELMINTHOLOGY

J. J. C. Buckley, D.Sc., *Professor of Helminthology*

MYCOLOGY

I. G. Murray, M.B., Ch.B., D.T.M. & H., M.C.Path., *Lecturer in Medical Mycology and Director of the P.H.L.S. Mycological Reference Laboratory*

PARASITOLOGY

P. C. C. Garnham, C.M.G., M.D., D.Sc., D.P.H., F.R.S., *Professor of Medical Protozoology*

G. S. Nelson, M.D., D.T.M. & H., D.A.P. & E., *Reader in Medical Protozoology*

Queen Elizabeth College

Campden Hill Road, London, W.8. Tel.: Western 3704

BIOLOGY

J. Edelman, Ph.D., *Professor*: biochemical basis of physiological behaviour in tubers, especially carbohydrate metabolism of potato and Jerusalem artichoke; protein synthesis in plant tissues

M. Black, Ph.D.: studies on germination and dormancy, especially of light-sensitive seeds

J. B. Heale, Ph.D.: enzymological studies, toxin formation and genetical aspects in the host-parasite relationship of vascular wilt in lucerne and pea caused by *Verticillium* and *Fusarium* respectively

T. G. Jefford, Ph.D.: biochemical basis of physiological behaviour in tubers, especially carbohydrate metabolism of potato and Jerusalem artichoke

Mrs. D. O. Rawson, M.Sc.: germ cell migrations in tapeworms in relation to the interpretation of strobilisation

M. Richardson, Ph.D.: studies on germination and dormancy, especially of light-sensitive seeds

J. G. Vaughan, Ph.D.: anatomy of oil seeds

MICROBIOLOGY

S. J. Pirt, Ph.D., *Reader and Head of Department*: cultivation of micro-organisms

NUTRITION

John Yudkin, M.A., Ph.D., M.D., *Professor and Head of Department*: effect of diet on obesity in man; studies on sucrose as a cause of coronary thrombosis and other diseases; factors determining food habits

A. E. Bender, B.Sc., Ph.D.: biochemical aspects of carbohydrate metabolism

Miss A. M. Copping, D.Sc., *Reader*: histochemical studies of nutritional deficiency

D. S. Miller, B.Sc.: interrelationships between protein and energy metabolism

D. Robinson, B.Sc., Ph.D., *Reader*: β -glycosidases in seeds

R. H. J. Watson, Ph.D.: relationships between nutrition and behaviour in the rat

Queen Mary College

Mile End Road, E.1. Tel.: Advance 4811

BOTANY

Prof. E. A. Bevan, M.A. (Oxon.), Ph.D. (Glas.): biochemical genetics of micro-organisms particularly yeast and bacteria

UNITED KINGDOM

- Prof. Maud B. E. Godward, M.Sc. (Lond.), Ph.D. (Lond.): nuclear cytology including electron microscopy; cytology of irradiated cell populations, especially algal cultures and dry angiosperm seeds
- B. Frankland, Ph.D. (Wales): plant hormones in relation to seed dormancy, seedling growth and other developmental changes
- B. M. G. Jones, Ph.D. (Leic.): experimental taxonomy of flowering plants
- D. A. McCarthy, Ph.D. (Lond.): biochemistry of plant viruses
- H. V. Newby, B.Sc.Agr., B.Sc. (Lond.): ecological studies of soil fungi
- H. Smith, Ph.D. (Wales): the metabolic role of phytochrome with special reference to nucleic acid and protein synthesis; control of flavonoid biosynthesis in peas
- P. J. Wanstall, B.Sc. (Lond.): ecology of bryophytes with particular reference to their distribution and nutrition
- B. M. Wilkins, Ph.D. (Oxon.): the genetics of bacteria

Royal Holloway College

Englefield Green, Surrey. Tel.: Egham 4455

BOTANY

- Prof. K. Wilson, M.Sc., Ph.D. (Lond.): plant physiology, structure and growth of the cell wall
- P. A. Dixon, B.Sc. (Lond.): fungal cytogenetics
- J. H. Evans, B.Sc., Ph.D. (Lond.): Algae, freshwater ecology
- Miss J. E. Kerr, B.Sc., Ph.D. (Lond.): mycology, fungal genetics
- E. Lodge, B.Sc., Ph.D. (Lond.): ecological and taxonomic bryophytes
- Miss M. A. P. Madge, B.Sc., Ph.D. (Lond.): cytology and algae
- W. A. Stevens, B.Sc., Ph.D. (Lond.): plant physiology, physiology of germination and virus infection
- L. R. G. Valadon, B.Sc., Ph.D. (Soton.): plant physiology, fungal biochemistry and plant growth

ZOOLOGY

- J. W. Lewis, B.Sc., Ph.D. (Wales): physiological and ecological aspects of the helminth parasites of mammals
- A. J. Pontin, M.A., D.Phil. (Oxon.): population dynamics and behaviour of ants
- Miss J. G. Thomas, B.Sc., Ph.D. (Lond.): functional morphology of Acridoidea with special reference to sense organs; secretion of pheromones in locusts
- G. I. Twigg, B.Sc., Ph.D. (Sheff.): relationship of leptospirosis in domestic stock to its incidence, distribution and ecology in British wild mammals; biology and ecology of rodents in disease transmission/crop destruction

Royal Veterinary College

Royal College Street, London, N.W.1. Tel.: Euston 2898

ANATOMY, INCLUDING HISTOLOGY, EMBRYOLOGY AND BIOLOGY

- R. F. S. Creed, M.A.: reproductive studies in Carnivora
- F. S. Drury, M.R.C.V.S.: radiological and surface anatomy: osteology of the Caprina
- K. M. Dyce, B.Sc., D.V.M. & S., M.R.C.V.S.: functional anatomy of locomotion: electromyography
- Mrs. N. P. Hodson, M.A., M.V.Sc., M.R.C.V.S.: andrology
- J. H. Jackson, M.A., B.Sc.: mammalian embryology: plant toxicology
- D. G. Lewis, M.R.C.V.S.: study of the development of the fore and hind limbs of the cat, from birth to epiphyseal closure; developmental anatomy of cat skeleton

UNITED KINGDOM

- R. H. A. Merlen, M.R.C.V.S.: applied anatomy; veterinary history
M. G. A. D. Scott, M.Sc.: nutrition and reproduction in the male cat

ANIMAL HUSBANDRY AND VETERINARY HYGIENE

- J. A. Laing, B.Sc., Ph.D., M.R.C.V.S.: *Professor of Animal Husbandry and Veterinary Hygiene*: animal reproduction
D. A. Green, M.R.C.V.S.: growth in horses
A. E. Harrop, M.R.C.V.S.: canine reproduction
R. Hill, B.Sc., Ph.D.: mineral nutrition in the fowl
E. C. Offord, M.R.C.V.S.: environmental studies of poultry
H. Ll. Williams, B.Sc.Agr., M.Sc., N.D.D.H.: growth and production in sheep

MEDICINE

- F. R. Bell, B.Sc., Ph.D., F.R.C.V.S., *Head of Department of Medicine and Professor of Experimental Veterinary Medicine*: nervous diseases
B. M. Bush, B.V.Sc., M.R.C.V.S.: diseases of canine metabolism
J. C. Greatorex, Ph.D., F.R.C.V.S.: equine medicine
J. E. T. Jones, M.R.C.V.S.: neuropathology of experimental ischaemia in ruminants
A. R. Michell, B.Sc., B.Vet.Med., M.R.C.V.S.: taste and electrolyte metabolism
P. A. Mullen, B.Sc., M.R.C.V.S.: diseases of calves
E. K. Price, M.R.C.V.S.: cardiovascular conditions in farm animals
Salah El Din Razig, B.V.Sc.: gastro-enterology of domesticated animals
J. R. Simmons, B.Vet.Med., M.R.C.V.S.: diseases of the neo-natal pig
M. F. Tarttelin, B.Sc., B.Vet.Med., M.R.C.V.S.: neural control of food intake in ruminants
L. R. Thomsett, M.R.C.V.S.: diseases of the skin

PATHOLOGY

- E. Cotchin, D.Sc., F.R.C.V.S., F.C.Path., *Professor of Veterinary Pathology*: neoplasia in animals
A. O. Betts, B.Sc., M.A., Ph.D., M.R.C.V.S., *Professor of Veterinary Microbiology and Parasitology*: infections of calves and pigs
E. C. Appleby, B.Sc., Ph.D., M.R.C.V.S.: pathology, especially avian
W. P. Beresford-Jones, M.A., Ph.D., M.R.C.V.S.: parasitology
I. A. Cheyne, B.Vet.Med., M.R.C.V.S.: clinical pathology
J. B. Dixon, M.A., Vet.M.B., M.R.C.V.S.: parasitology
D. G. Harvey, M.B.E., B.Sc., Ph.D., F.R.I.C.: chemical pathology
A. H. S. Hayward, M.R.C.V.S.: pathology
P. L. Ingram, B.Sc., Ph.D., M.R.C.V.S.: pathology, especially of calves
J. N. Oldham, B.Sc., Ph.D.: parasitology
P. A. Papasolomontos, B.Vet.Med., M.R.C.V.S.: pathology, especially avian
Miss J. Poland, B.V.Sc., D.T.V.M., M.R.C.V.S.: microbiology
I. M. Smith, M.Sc., M.R.C.V.S.: microbiology

PHYSIOLOGY AND CHEMISTRY

- E. C. Amoroso, M.B., B.Ch., B.A.O., B.Sc., Ph.D., D.Sc., H.A.R.C.V.S., F.R.C.S., F.R.S., *Professor of Veterinary Physiology*: placentation; reproductive physiology; physiology of the foetus
E. G. C. Clarke, M.A., Ph.D., D.Sc., F.R.I.C.: properties of phytotoxins; microidentification of alkaloids; microchemistry of poisons
J. M. Bedford, M.A., Ph.D., Vet.M.B., M.R.C.V.S.: physiology of mammalian gametes
C. A. Finn, B.Sc., M.R.C.V.S.: implantation of ova
F. A. Holton, M.A., Ph.D.: enzymology of intracellular respiration
P. Lees, B.Pharm., Ph.D.: endocrine influences in electrolyte balance

UNITED KINGDOM

- P. A. Mayes, B.Sc., Ph.D., M.I.Biol.: the metabolism of fat with special reference to ketone bodies
R. H. Marchant, B.Sc., Ph.D., A.R.I.C., A.R.P.S.: tryptophan metabolism: hydrolysis of adenosine triphosphate by chloroplasts
R. H. Nisbet, B.Sc., Ph.D.: neurophysiology, neurosecretion and ultrastructure in Achatinidae
Miss B. M. Schofield, B.Sc., Ph.D.: the endocrine control of myometrial function

SURGERY AND OBSTETRICS

- C. Formston, F.R.C.V.S., *Professor of Veterinary Surgery*: general surgery and ophthalmology
G. H. Arthur, D.V.Sc., F.R.C.V.S., *Professor of Veterinary Obstetrics and Diseases of Reproduction*: veterinary obstetrics
G. J. Baker, B.V.Sc., M.R.C.V.S.: general surgery and diseases of the upper respiratory tract
R. C. Frost, M.R.C.V.S.: urology and fracture fixation
G. C. Knight, F.R.C.V.S.: general surgery, radiology and ophthalmology
W. D. Tavernor, B.V.Sc., M.R.C.V.S.: general surgery and anaesthesia
L. C. Vaughan, F.R.C.V.S.: general surgery and orthopaedics

University College

Gower Street, London, W.C.1. Tel.: Euston 7050

BOTANY

- D. Lewis, D.Sc., F.R.S., *Quain Professor of Botany*: fungal and plant genetics
L. Fowden, Ph.D., F.R.S., *Professor of Plant Chemistry*: amino acid metabolism
P. R. Bell, M.A.: fine structure of nucleus and cells, morphogenesis
W. G. Chaloner, Ph.D.: palaeobotany
P. Dunnill, Ph.D.: protein configurations
J. R. Ellis, Ph.D.: cytology
I. Morris, Ph.D.: algal physiology
P. J. Newbould, Ph.D.: ecology
A. W. Robards, B.Sc.: anatomy and fine structure
R. J. Rowbury, D.Phil.: bacterial metabolism
D. G. Smith, Ph.D.: bacteriology
P. J. Syrett, D.Sc.: intermediate metabolism
K. Taylor, Ph.D.: ecology
H. Tristram, B.Sc.: protein synthesis and enzymes
D. J. B. White, Ph.D.: plant anatomy
D. Wilkie, Ph.D.: fungal genetics

GENETICS

- H. Grüneberg, D.Sc., F.R.S., *Professor of Genetics*: inherited diseases in mammals

ZOOLOGY

- R. C. Fisher, M.A., Ph.D.: physiology of parasitic insects
F. B. O'Connor, Ph.D.: functional ecology of the soil fauna

A.R.C. Unit of Structural Chemistry, see page 22

Westfield College

Kidderpore Avenue, London, N.W.3. Tel.: Hamstead 7601

BOTANY

- Prof. G. E. Fogg, B.Sc. (Lond.), Ph.D. (Cantab.), F.R.S.: nitrogen fixation by blue-green algae and extracellular products of algae

UNITED KINGDOM

- R. S. Clymo, B.Sc., Ph.D. (Lond.): autecology of *Sphagnum*; ecology of mires and salt-marshes
G. J. Cunnell, B.Sc., Ph.D. (Lond.): developmental morphology in vascular plants
R. L. Evans, B.Sc.Agr. (Wales): inheritance of resistance to fungal pathogens in barley
P. Fay, Ph.D. (Lond.): biochemistry and physiology of nitrogen fixation in blue-green algae
D. O. G. Gray, B.A. (Cantab.), Ph.D. (Lond.): chemistry and metabolism of amino compounds in plants
W. D. P. Stewart, B.Sc. (Glas.), Ph.D. (Glas.): nitrogen fixation in natural populations of micro-organisms
A. E. Walsby, B.Sc. (Birm.): physiology of blue-green algae

Wye College

Wye, Ashford, Kent. Tel.: Wye 401

AGRICULTURE

- W. Holmes, B.Sc.Agr., Ph.D., N.D.A.Hons., N.D.D., *Professor of Agriculture*: nutrition of ruminants; land use in food production
R. C. Campling, B.Sc., M.Sc., Ph.D.: ruminant studies
J. E. Duckworth, B.Sc., Ph.D.: pig breeding and selection
G. M. Milbourn, B.Sc., M.Sc., Ph.D.: crop physiology

AGRICULTURAL ECONOMICS

- G. P. Wibberley, B.Sc.Agr., Ph.D., M.S.(Ill.), *Professor of Rural Economy*: agricultural and land economics; comparative land competition studies
G. Allanson, M.A., M.Sc.: feed economy of dairy farms in England and Wales
R. Best, B.Sc., M.Sc.: land economics; land use in small settlements; future urban area studies
T. L. Burton, B.Sc.Econ.: studies in outdoor recreation as a factor in rural development
E. S. Clayton, B.Sc., B.Com., Ph.D.: agrarian change in peasant farming in Kenya
G. F. Donaldson, B.Sc., Dip.Agr.Econ. (Syd.): research and advisory methods in farm management
R. R. W. Folley, B.Sc., B.Com., Ph.D.: horticultural production economics in Britain and Western Europe
Miss R. Gasson, B.Sc.Agr., Dip.Agr.Econ., M.Sc.: future land requirements for agriculture; changes in land tenure in the urbanized countryside
J. McInerney, B.Sc.Agr., Ph.D. (Iowa): farm management advice
J. A. H. Nicholson, B.Sc.Hort., M.Sc.: horticultural management
J. S. Nix, B.Sc., M.A.: farm buildings and farm management
I. G. Reid, B.Sc., Dip.Agr.: farm organization and management; management accounting and whole farm business
J. D. Sykes, B.Sc., N.D.A., Dip.Agr.Econ.: systems of farming in S.E. England; economic problems in pig production; agricultural adjustment
J. P. G. Webster, B.Sc.: farm management advice

BIOLOGICAL SCIENCES

- I. W. Selman, D.Sc., *Professor of Agricultural Botany*: physiological analysis of virus-infected plants
G. J. Dowrick, Ph.D.: breeding and cytogenetics of lily and chrysanthemum
B. Freeman, Ph.D.: ecology of the clover seed weevil
T. A. Hill, Ph.D.: gibberellins of the tomato
P. Mueller, Ph.D.: leaf protein studies in virus-infected plants

W. E. Peat, Ph.D.: physiological analysis of some Brassica hybrids

G. F. Pegg, Ph.D.: verticillium infection in tomato

HOP RESEARCH

R. A. Neve, B.Sc., Ph.D., Dip.Agr.Sc., *Head of Department*: plant breeding

F. C. Thompson, B.Sc., M.Sc.Agr., A.R.I.C., *Deputy Head of Department*:
manuring and field trials

R. D. Hartley, B.Sc., Ph.D.: organic chemistry

D. J. Royle, B.Sc., Ph.D.: plant pathology

M. W. Shea, N.D.Agr.E., A.M.I.Ag.E.: engineering

G. G. Thomas, B.Sc., M.Sc.: plant physiology

HORTICULTURE

W. W. Schwabe, D.I.C., Ph.D., D.Sc. (Lond.), *Professor of Horticulture*: plant
physiology and morphogenesis in relation to environment

S. W. Burrage, B.Sc., Ph.D.: microclimatology

A. A. Jackson, B.Sc.: vegetable crop husbandry; plant improvement; crop
successions under temporary protection

E. H. Wilkinson, B.Sc., Ph.D.: pomology; physiology of perennial fruit crops

MARKET RESEARCH

J. Kirk, C.B.E., M.A., B.Com., *Professor of Marketing* (with special reference
to horticultural marketing): various studies in the improvement of horticultural
marketing

P. G. Ellis, B.A., M.Sc.: the distribution of horticultural produce at wholesale
markets and the horticultural regulations of the European Economic Com-
munity

A. R. Hunt, B.Sc., M.Sc.: special features of the demand of catering establish-
ments and institutions for horticultural produce

PHYSICAL SCIENCES

R. L. Wain, D.Sc., F.R.S., *Professor of Agricultural Chemistry*: chemical structure
in relation to growth regulating activity and systemic fungicidal action;
metabolism of growth regulators and systemic fungicides

B. Booth, B.Sc.: petrology and geochemistry of granites

R. H. Davis, B.Sc.: fat absorption in pigs and poultry

A. E. Flood, M.A., Ph.D.: biochemical aspects of plant growth regulation

J. L. Garraway, B.Sc., Ph.D.: synthesis and mode of action of organic fungicides

Miss J. M. A. Ingram, B.Sc.Agr., M.Sc.: studies and assessment of soil structure

C. D. Kennedy, B.Sc., Ph.D.: physico-chemical aspects of plant growth regula-
tion

J. L. M. Lambert, B.Sc., Ph.D.: mineralogy of soil clays

C. H. Martindale, M.Sc.: assessment of nutritive value of feeding stuffs

S. G. McRae, B.Sc.: soil survey studies

R. Price, B.Sc.: biological oxidation of synthetic compounds

Miss M. S. Smith, B.Sc., Ph.D.: synthesis of plant growth regulators; mode of
action studies

E. W. Weston, B.Sc.: chemical changes in plant tissue following application of
plant growth regulators

POULTRY

R. D. Hodges, B.Sc., Ph.D.: physiology of egg shell formation in the fowl

P. Hunton, B.Sc., M.Sc.: poultry genetics

A. H. Sykes, M.A., Ph.D.: reproductive physiology of the fowl

A.R.C Plant Growth Substance and Systemic Fungicide Unit, see page 21

UNITED KINGDOM

MANCHESTER UNIVERSITY

Manchester 13. Tel.: Ardwick 3333

AGRICULTURAL ECONOMICS

The Department is engaged on research and advisory work in agricultural economics within the province and participates in national investigations required by the Ministry of Agriculture, Fisheries and Food. Research studies cover farm management, capital and credit in agriculture, agricultural labour, food supplies and food consumption, food supplies and prices, and agricultural development and productivity.

W. J. Thomas, M.Sc., *Professor of Agricultural Economics and Head of Department*
J. Stewart, B.Sc.Agr., *Director of Farm Management Advisory Work*

Senior Lecturers

K. G. Cowling, B.Sc., N.D.A., Ph.D.
T. W. Gardner, M.A., Ph.D.

Lecturers and Assistant Lecturers

D. Colman, B.Sc., M.S.
D. Feldman, M.Sc.Econ.
T. Kempinski, Mag.jnr., M.A.
D. Metcalf, B.A.Econ.
J. M. Slater, B.Sc., M.S.A., Ph.D.

Agricultural Economists and Investigational Officers

J. E. Holt, B.A.Econ.
D. O. Jones, B.A.Econ.
C. Lloyd, B.Sc.
Mrs. D. I. S. Richardson, B.A.
W. W. Richardson, B.A.
Miss F. R. Walker, B.Sc.

BOTANY

C. W. Wardlaw, Ph.D., D.Sc., M.Sc., F.R.S.E., *Professor of Botany*: morphogenesis; diseases of tropical crops
J. Colhoun, B.Sc., M.Agr., Ph.D., D.Sc., D.I.C., F.L.S., *Professor of Cryptogamic Botany*: mycology and plant pathology, especially diseases of Brassicaceae, cereals, fruit and flax
A. Allsopp, D.Sc., M.Sc., Ph.D.: developmental morphology
R. D. Butler, B.Sc., Ph.D.: cytology
Miss M. G. Calder, B.Sc., Ph.D.: paleobotany
W. A. Charlton, B.Sc., Ph.D.: morphogenesis in roots
K. J. Dormer, B.Sc., Ph.D.: taxonomy
H. E. P. E. Epton, B.Sc.: biochemical problems of plant pathology
R. R. Frost, B.Sc., Ph.D.: virus diseases of plants
B. H. Green, B.Sc., Ph.D.: autecology of *Sphagnum* species
J. N. Hartshorne, B.Sc., Ph.D.: genetics, sex ratio in dioecious plants
P. Newton, B.Sc., Ph.D.: growth analysis
R. C. Pecket, B.Sc., Ph.D.: flower pigmentation: phenolic compounds
E. H. Roberts, B.Sc., Ph.D.: physiology of seeds
E. W. Simon, M.A., D.Phil.: plant respiration and fermentation
C. A. Stace, B.Sc., Ph.D.: experimental plant taxonomy
J. H. Tallis, B.Sc., Ph.D.: plant ecology
G. S. Taylor, B.Sc., Ph.D.: biology of soil-borne fungi
B. Truelove, B.Sc., Ph.D.: organic acid metabolism

ZOOLOGY

- R. Dennell, M.Sc., D.Sc., F.L.S., *Beyer Professor of Zoology*
 A. J. Cain, M.A., D.Phil., *Professor of Zoology: ecology*
 R. R. Askew, B.Sc., D.Phil.: entomology (Hymenoptera), biological control
 J. G. Blower, M.Sc.: ecology, terrestrial arthropods, soil fauna
 R. D. Butler, B.Sc., Ph.D.: cytology
 L. M. Cook, B.Sc., D.Phil.: population genetics
 M. E. G. Evans, B.Sc., Ph.D.: entomology (Coleoptera)
 P. D. Gabbutt, B.Sc., Ph.D.: ecology of Arachnida
 J. N. Hartshorne, B.Sc., Ph.D.: genetics
 E. J. Iles, B.Sc., Ph.D.
 J. H. Kennaugh, M.Sc., Ph.D.
 K. R. M. Marriott, B.Sc., Ph.D.
 M. P. Thomas, B.Sc., Ph.D.
 R. J. Wood, B.Sc., Ph.D.: genetics, particularly of mosquitoes
 D. W. Yalden, B.Sc.: mammalogy

UNIVERSITY OF NEWCASTLE-UPON-TYNE

School of Agriculture

Newcastle-upon-Tyne, 1. Tel.: Newcastle 28511

- M. McG. Cooper, C.B.E., B.Agr.Sc. (N.Z.), B.Litt. (Oxon.), Dip.Rur.Econ. (Oxon.), F.R.S.E., *Dean of Agriculture and Professor of Agriculture and Rural Economy, Director of Cockle Park Research Farm*

AGRICULTURE

Animal Breeding and Selection

- M. Bichard, Ph.D. (Newcastle), B.Sc. (R'dg.): performance and progeny testing of Clun Forest sheep; selection in a poultry population based on a combination of four breeds
 H. Tonks, B.Sc. (Dunelm): selection in Large White pigs

Pig Production

- W. C. Smith, B.Sc. (Edin.), M.Agr.Sc. (N.Z.): environmental studies, pig nutrition and carcass evaluation

Sheep Production

- J. N. Merridew, M.Sc. (Dunelm), B.Sc. (Wales): intensive housing of sheep
 D. W. Morris, Ph.D. (Dunelm), B.Sc. (Wales): intensive fat lamb production
 R. J. Thomas, B.V.Sc., M.Sc. (Brist.), Ph.D. (Dunelm): endoparasites of sheep and their control

Cattle Production

- J. H. D. Prescott, B.Sc.Agr., Ph.D. (Nott.): nutrition of beef and dairy cattle, pasture utilization studies, beef carcass evaluation

Crop Production

- R. Q. Cannell, B.Sc. (Dunelm): physiology of crop growth; effects of poaching on pasture production
 A. Main, B.Sc. (Dunelm): crop production studies

AGRICULTURAL BIOCHEMISTRY

Metabolism in the rumen; digestion of nitrogen and carbohydrate in the lower part of the alimentary tract of ruminants; milk synthesis; mineral metabolism in pigs.

- D. G. Armstrong, M.Sc., Ph.D. (Dunelm), F.R.I.C.
 R. C. Seeley, M.Sc. (Lond.)
 A. Thompson, M.Sc. (Dunelm), M.S. (Tennessee), F.R.I.C.

UNITED KINGDOM

AGRICULTURAL ECONOMICS

Agricultural and economic policy; economic development; regional studies; farm management; international trade.

Prof. J. Ashton, M.A. (Oxon.), B.Litt., M.S. (Corn.)

S. J. Rogers, B.Sc. Econ. (Lond.), *Senior Lecturer*

J. G. Blake, B.A. (Dunelm)

R. F. Lord, B.Sc.Agr. (Lond.), N.D.A.

S. Robson, B.Sc. (Dunelm)

A. W. Tansey, B.Sc.Agr. (Lond.)

M. C. Whitby, B.Sc.Agr. (R'dg.), Dip.Agr.Econ. (Oxon.)

T. Winter, M.Sc. (Dunelm), N.D.A.

AGRICULTURAL ENGINEERING

P. A. Cowell, B.Sc., M.Sc.Agr.Eng. (Dunelm), A.M.I.Mech.E., A.M.I.Agr.E.: tractor and implement dynamics

H. Fail, B.Sc. (Dunelm), M.I.Agr.E.: land reclamation and mechanization studies

D. J. Greig, B.Sc. (Leeds), M.Sc.Agr.Eng. (Dunelm), A.M.I.Agr.E.: crop drying, environmental control and mechanization economics

A. R. Reece, B.Sc., M.Sc.Agr.Eng. (Dunelm), Ph.D., A.M.I.Mech.E., A.M.I.Agr.E.: soil-vehicle and soil-implement mechanics; tractor and implement mechanics

AGRICULTURAL ENTOMOLOGY

A. Ibbotson, B.Sc. (Birm.), Dip.Agr.Sc. (Cantab.), D.I.C., Ph.D. (Dunelm): ecology and bionomics of frit fly

B. J. Selman, B.Sc., Ph.D. (Brist.), F.Z.S.: taxonomy and biology of the Chrysomelidae with special reference to the Eumolpinae biology, ecology and physiology of selected pest species, especially garden chafer, leather jacket, swede pests and pests of strawberries

*W. J. S. Kershaw, B.Sc. (Manc.), Ph.D. (Cantab.)

*M. L. Luff, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.

*A. Milne, M.A., D.Sc., Ph.D. (Aberd.), F.I.Biol., F.R.S.E.

AGRICULTURAL MARKETING

Prof. E. M. Carpenter, M.A. (Oxon.)

P. J. Baron, B.Sc. (Dunelm), M.S. (Calif.)

G. H. Brayshaw, M.A. (Cantab.)

W. J. G. Cowie, B.A. (Aberd.)

R. J. Perkins, B.A. (Keele), M.A.Econ. (Manc.)

W. R. Stent, B.Agr.Sc. (Melb.), Dip.Agr.Econ. (Oxon.), D.T.A. (Trin.)

W. G. R. Weeks, B.Sc. (Dunelm)

PLANT SCIENCE

Prof. Watkin Williams, D.Sc., M.Sc. (Wales): genetics of crop plants; the nature of heterosis; developmental genetics

F. Blackburn, B.Sc. (Dunelm), M.S. (Rutgers): soil microflora and soil biogenesis; taxonomy of streptomyces

Mrs. H. H. Clark, M.Sc. (Dunelm): the history and evolution under cultivation of the temperate cereal

J. H. W. Holden, B.Sc., Ph.D. (Wales): species relationships among species of *Avena*

B. J. Mifflin, B.Sc., M.S. (Ill.), Ph.D.: enzyme activities in plants

SOIL SCIENCE

Prof. P. W. Arnold, B.Sc. (Wales), M.A. (Cantab.), Ph.D. (Lond.): properties of soil colloids; ion activity ratios and the nutrition of crops

*Members of A.R.C. Unit of Insect Physiology, see page 20.

UNITED KINGDOM

- G. P. Askew, B.Sc.Agr., B.Sc. (Lond.): formation and fertility of tropical soils; pedogenesis on limestones; petrography of northern glacial drifts
F. Hunter, B.Sc. (Dunelm), F.R.I.C.: fertilizer responses; hill land improvement; land restoration
R. F. Montgomery, B.Sc. (St. And.): catenary relationships in Western Nigeria; tropical pedogenesis
Miss Joyce Pringle, B.Sc.Agr., Ph.D. (Aberd.): restoration of open-cast coal sites; soil structure

UNIVERSITY OF NOTTINGHAM

University Park, Nottingham. Tel.: Nottingham 56101

BOTANY

- Prof. C. G. C. Chesters, B.Sc. (Glas.), M.Sc., Ph.D. (Birm.): root-rot syndromes with particular reference to glasshouse crops; moulding of grain during "dry" and "wet" storage; investigation of the total mould flora of grain stores
G. J. F. Pugh, B.Sc. (Wales), Ph.D.: ecology of rhizosphere fungi, particularly in early stages of colonisation of unstable substrates
M. C. Pearson, B.Sc., Ph.D. (Dunelm): studies of the hydrology of peat deposits including measurements of the water regime and its influence on the distribution and performance of plants growing in the peat

School of Agriculture

Sutton Bonnington, Loughborough, Leics. Tel.: Kegworth 386

AGRICULTURE

- J. D. Ivins, B.Sc., M.Sc.Agr., Ph.D., *Professor of Agriculture and Head of Department*: crop physiology and yields; growth and productivity of grasses
G. E. Lamming, B.Sc., M.S., Ph.D., N.D.A., *Professor of Animal Science*: reproductive physiology of sheep; uterine secretions and physiology of growth of beef cattle, sheep
P. M. Bremner, B.Sc., M.S., Dip.Agr.: crop physiology and yields of cereals, potatoes, sugar beet
D. B. Crighton, B.Sc.Agr., M.Sc.: pig reproductive physiology; lactational anoestrus; breeding from sows during lactation
N. B. Haynes, B.Sc., Ph.D.: pig reproductive physiology; chemistry of uterine secretions
G. A. Lodge, B.Sc., Ph.D.: pig nutrition; high energy diets for dairy cows
C. G. Payne, B.Sc., Ph.D.: poultry nutrition and environment
B. Wilton, M.Sc.: mechanization—sugar beet crop and silage handling

AGRICULTURAL ECONOMICS

St. Michael's House, Sutton Bonnington, Loughborough, Leics. Tel.: Kegworth 508/9

- D. K. Britton, M.A. (Oxon.), B.Sc.Econ. (Lond.), *Professor, Head of Department*: structural changes in British agriculture
R. Bennett Jones, M.Sc. (Wales): contribution of livestock enterprises to the economy of mixed farms
J. E. Bessell, F.I.S.: econometric farming models and measurement of management
K. A. Ingersent, B.Sc. (Aberd.), M.S. (Minn.): techniques for identifying "representative farms"
W. S. Senior, B.Sc.Agr.: economics of production of eggs and poultry
T. K. Warley, M.Sc. (Nott.): Common Market agricultural policy; economic engineering study of the egg packing industry

UNITED KINGDOM

AGRICULTURAL SCIENCES

Agricultural Botany

F. L. Milthorpe, M.Sc.Agr. (Syd.), Ph.D. (Lond.), D.I.C.: *Professor, Head of Department*

W. J. Whittington, B.Sc. (Wales), Ph.D. (Nott.), *Senior Lecturer (Genetics)*

R. T. Clarke, M.A. (Oxon.), Dip.Agr.Sc. (Cantab.), *Lecturer (Biometry)*

K. W. Dent, B.Sc., Ph.D. (Birm.), *Lecturer (Plant Physiology)*

Miss M. M. Edwards, M.Sc., Ph.D. (Manc.), *Lecturer (Genetics)*

T. F. Hering, M.A., Ph.D. (Cantab.), *Lecturer (Plant Pathology)*

J. Moorby, B.Sc., Ph.D. (Manc.), *Research Fellow (Plant Physiology)*

D. A. Morris, B.Sc. (R'dg.), *Research Fellow (Plant Physiology)*

Agricultural Chemistry

D. Lewis, M.A. (Cantab.), M.Sc. (Wales), Ph.D. (Sheff.), D.Sc. (Nott.), F.R.I.C., *Professor (Biochemistry and Animal Nutrition)*

D. V. Crawford, M.A., B.Sc. (Oxon.), Ph.D. (Nott.), *Senior Lecturer (Soil Science)*

P. E. Cansfield, B.Sc. (Wales), *Lecturer (Biochemistry)*

I. R. Cowan, M.Sc. (Lond.), *Lecturer (Environmental Physics)*

I. R. Falconer, B.Sc. (Nott.), Ph.D. (Aberd.), *Lecturer (Animal Biochemistry)*

R. G. Hiller, B.A. (Cantab.), Ph.D. (Lond.), *Lecturer (Plant Biochemistry)*

M. McGowan, B.Sc. (Newcastle), M.A., Ph.D. (Cantab.), *Lecturer (Soil Science)*

G. Norton, B.Sc., Ph.D. (Nott.), *Lecturer (Plant Biochemistry)*

Agricultural Microbiology

M. Woodbine, M.Sc., Ph.D. (Manc.), F.R.I.C., *Reader*

A. Seaman, B.Sc. (Lond.), Ph.D. (Nott.), *Lecturer*

Agricultural Zoology

P. W. E. Murphy, B.Agr.Sc. (N.U.I.), D.Phil. (Oxon.), *Lecturer*

J. Y. Ritchie, B.Sc.Agr. (Glas.), *Lecturer*

Food Science

R. A. Lawrie, B.Sc. (Glas.), Ph.D. (Cantab.), F.R.I.C., F.I.F.S.T., *Reader*

M. Stein, J.U.Dr. (Prague), B.Sc., Ph.D. (Leeds), *Lecturer*

J. M. V. Blanshard, M.A. (Cantab.), *Lecturer*

HORTICULTURE

J. P. Hudson, M.B.E., G.M., B.Sc.Hort. (Lond.), M.Sc. (Lond.), Ph.D. (Nott.), N.D.H., *Professor of Horticulture*: effects of different water-regimes and salt concentrations on the growth and yield of plants under temperate and tropical conditions; control of environment for experimental work with plants and effects of environment on growth; possibilities of affecting responses of plants to particular weather conditions

Miss Winifred M. Dullforce, M.Sc. (Nott.), N.D.H.: analysis of the growth of plants in relation to environmental factors and the effects of transplanting

W. Heydecker, B.Sc.Hort. (R'dg.), M.Sc. (Nott.), Ph.D. (Nott.), N.D.H. Hons.: effect of inherent and environmental factors on seed germination and establishment of crops

Miss Margaret E. Marston, B.Sc. (Lond.), M.Sc.Hort. (Nott.), Ph.D. (Nott.), N.D.H.: vegetative propagation of plants, with special reference to mist propagation, regeneration from leaf cuttings, and meristem culture of orchids

UNIVERSITY OF OXFORD

Department of Agriculture

Parks Road, Oxford. Tel.: Oxford 57245

G. E. Blackman, M.A., F.R.S., *Head of Department and Sibthorpian Professor of Rural Economy*P. H. Nye, M.A., B.Sc., *Reader in Soil Science**University Lecturers and Senior Research Officers*

J. M. Barry, M.A., D.Phil.: animal biochemistry

P. H. T. Beckett, M.A., D.Phil.: pedology; thermodynamics in soil

J. R. Clarke, M.A., D.Phil.: animal physiology

G. L. Hodgson, M.A., D.Phil.: crops and grassland

B. C. Loughman, M.A., Ph.D.: plant biochemistry and physiology

R. L. Lucas, M.A., Ph.D.: plant pathology and microbiology

R. P. Martin, M.A., D.Phil.: physics— isotopes

G. B. Masefield, M.A.: tropical agriculture

D. C. Smith, M.A., D.Phil.: plant physiology

M. H. R. Soper, O.B.E., M.A.: crop husbandry

P. B. Tinker, M.A., Ph.D.: soil chemistry; plant nutrition

A.R.C. Unit of Experimental Agronomy, see page 20**Agricultural Economics Research Institute**

Parks Road, Oxford. Tel.: Oxford 57775

Colin Clark, M.A., *Director*

A. G. Antill, M.A.: economic statistics

W. H. Beckett, M.A.: credit and co-operation; economic aspects of agriculture in less developed areas

H. Frankel, M.A.: state intervention in agriculture

G. P. Hirsch, M.A.: rural social organization

K. E. Hunt, M.A.: supplies and prices of agricultural products

G. T. Jones, M.A.: analysis of supply and demand

A. H. Maunder, M.A.: economics of farm organization

L. Moore, M.A.: international trade in agricultural products

G. H. Peters, M.A.: economic growth; location, land economics

L. D. Smith, B.Sc.: marketing

D. Wood, M.Com.: marketing

Department of Entomology

University Museum, Parks Road, Oxford. Tel.: Oxford 57527

G. C. Varley, M.A., Ph.D., *Head of Department and Hope Professor of Zoology (Entomology)**University Lecturers*

G. R. Gradwell, M.A.: winter moth population dynamics

M. W. R. De. V. Graham, M.A., D.Phil.: taxonomy of chalcid Hymenoptera

At Edward Grey Institute of Field Ornithology

Botanic Garden, Oxford. Tel.: Oxford 47826

D. Lack, M.A., D.Sc., F.R.S., *Director**Research Officers*

I. Newton, B.Sc. (Brist.), D.Phil.: food of the bullfinch

C. M. Perrins, B.Sc. (Lond.), M.A., D.Phil.: tit populations in woodland

UNITED KINGDOM

Department of Forestry, Commonwealth Forestry Institute

South Parks Road, Oxford. Tel.: Oxford 55757, 57891

- Prof. M. V. Laurie, O.B.E., M.A., *Director*: tropical forestry; forestry and land use; forest policy
- P. G. Biddle, B.A. (Oxon.): research on virus diseases of forest trees
- H. C. Dawkins, M.B.E., M.A., D.Phil. (Oxon.): management of forested tropical land; method in observation and experiment; computer application
- T. E. Edwardson, B.Sc., M.A. (Oxon.), B.Sc. For. (Edin.): methods of measurement of trees and woods
- P. F. Entwistle, B.Sc., A.R.C.S. (Lond.): entomology; tissue culture of insect cells; rickettsial diseases
- M. Gane, B.Sc.For. (Edin.), B.Sc.Econ. (Lond.): economic development; investment criteria; forestry and the national economy
- W. A. Gordon, M.A., Dip.Anth. (Oxon.), Bar-at-Law (Lond.): forest law; Commonwealth forestry
- W. R. C. Handley, M.A. (Oxon.), Ph.D. (Leeds): investigations on the activities of micro-organisms in the breakdown of vegetable debris
- K. A. Harrap, B.Sc. (Birm.): purification and serology of insect viruses; fine structure of electron microscopy of insect viruses
- A. C. Hoyle, B.Sc., M.A. (Oxon.): taxonomy and ecology of trees and shrubs, mainly of tropical Africa, and particularly the revision of the genus *Brachystegia*
- J. F. Hughes, M.A. (Oxon.), B.Sc. (Sheff.), Dip. Ed.: systematic anatomy of wood; anatomical basis of variation in structure and properties of wood
- E. W. Jones, M.A. (Oxon.), Ph.D. (Cantab.): ecology and silviculture of forest trees in Britain; tropical African forests
- A. F. A. Lamb, O.B.E., B.Sc.For. (Edin.): survey of potentialities of tropical pine trees
- L. Leyton, M.A. (Oxon.), Ph.D. (Leeds): mineral nutrient relations of forest trees; influence of certain environmental factors on the activity and growth of tree roots; water relations of the forest
- J. F. Longworth, M.Sc. (Manc.): pathology of virus infections in insects
- R. Lorrain-Smith, B.Sc.For. (Edin.): economic survey of private forests; income and expenditure of British Forestry
- J. J. MacGregor, B.Litt., M.A. (Oxon.), B.Sc. (Glas.), M.S. (Wis.): timber resources; supply and demand trends; prices; economic aspects of forest policy; survey of costs and prices in private forestry; work science; income and expenditure of British forestry; economics of scale in timber conversion
- F. C. Osmaston, M.A. (Oxon.): forest management and working plans; silvicultural systems and their practices; aerial survey
- C. J. W. Pitt, M.A. (Oxon.), B.Sc. (Rhodes): forest utilization and engineering
- E. R. C. Reynolds, B.Sc., Ph.D. (Lond.): water relations of plants; plant root distribution and water absorption; forest hydrology and water balance studies
- J. S. Robertson, B.Sc. (Manc.), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.): pathology of diseases of insects caused by protozoa and rickettsiae
- B. T. Styles, M.A., D.Phil. (Oxon.): preparation of botanical monographs of important forest trees, particularly Meliaceae
- F. B. Thompson, B.Sc. (Lond.): forest hydrology and water balance studies
- G. H. Thompson, B.Sc., M.A. (Oxon.): cinematography of insects and other small animals; research on techniques and the preparation of teaching films; biological studies of woodwasps of the genus *Xiphydria*
- T. W. Tinsley, M.A. (Oxon.), B.Sc. (Dunelm), Ph.D. (Lond.), *Head of Insect Pathology Unit*: forest pathology with particular emphasis on virus diseases and root disease fungi
- F. White, M.A. (Oxon.), M.A. (Cantab.): taxonomy and ecology of tropical trees and shrubs, mainly from Africa, and particularly from Zambia; revisions of the Ebenaceae and Meliaceae

UNITED KINGDOM

H. L. Wright, M.A. (Oxon.), M.S. (Yale): programming and analysis in forest inventory and experiment; special problems of volume estimation by multiple regression

Department of Zoology

Parks Road, Oxford. Tel.: Oxford 55278

J. W. S. Pringle, M.A., D.Sc., F.R.S., *Head of Department and Linacre Professor of Zoology*: physiology of insect flight

E. B. Ford, M.A., D.Sc., F.R.S., *Professor of Ecological Genetics*

N. Tinbergen, M.A., D.Phil., *Reader in Animal Behaviour*

University Lecturers and Senior Research Officers

P. C. J. Brunet, M.A., D.Phil.: insect biochemistry

H. B. D. Kettlewell, M.A., M.B.: industrial melanism

P. L. Miller, M.A., Ph.D.: insect respiration

Research

Miss D. E. Ashurst, M.A., D.Phil.: the structure of insect muscle and connective tissue

J. M. Cullen, M.A., D.Phil.: bird vision; fish behaviour

K. G. McWhirter, M.A.: natural selection in insects

A. C. Neville, Ph.D.: insect cuticle

C. J. C. Rees, D.Phil.: insect chemoreceptors

R. T. Tregear, M.A., physiology of insect flight muscle

M. E. Varley, M.A., Ph.D.: freshwater fish

D. L. Whitehead, M.A., D.Phil.: insect biochemistry

Departmental Demonstrators

D. J. Aidley, M.A., Ph.D.: insect muscle physiology

J. A. L. Cooke, M.A., D.Phil.: arachnid physiology and taxonomy

J. E. Paling, M.A., Ph.D.: fish parasites

A.R.C. Unit of Muscle Mechanism and Insect Physiology, see page 20

UNIVERSITY OF READING

Faculty of Agriculture

Tel.: Reading 81771

AGRICULTURE

A. N. Duckham, C.B.E., M.A., Dip.Agr. (Cantab.), *Professor of Agriculture*: comparative agriculture; synthesis of farming systems; human nutrition/population/farm production/land use complex

D. M. Allen, B.Sc., Ph.D.: animal production, including sheep reproduction, growth and nutrition; lactation response

N. S. Barron, B.Sc., Ph.D., M.R.C.V.S.: veterinary studies

D. W. I. Brooke, B.A., A.M.I.E.E.: instrumentation and automation of farm machinery and equipment

J. B. Dent, B.Sc., M.Agr.Sc., Ph.D.: farm management; pig nutrition and growth; programming methodology and farm models

J. N. Dominy, F.R.I.C.S., L.R.I.B.A.: design and layout of farmsteads

S. Fox, M.A., Dip.Agr.: animal and poultry production, including environmental effect studies; growth, nutrition and production response studies

J. A. C. Gibb, M.A., M.Sc.: farm materials handling

UNITED KINGDOM

- P. M. Harris, M.Sc., B.Sc.: crop production including role of organic matter; irrigation, plant population and nutrient requirement studies
D. H. Lloyd, B.Sc., M.O.M.S.: farm business control methodology; farm work organization; piggery design; poultry economics
K. E. Morgan, B.Sc., N.D.Agr.E.: tractor design; farm automation; flame weed control; mechanization in emergent agricultures
T. R. Morris, B.Sc.: poultry science, including light response and nutrition studies
J. Pearce, Ph.D., Dip.Agr.: farm management, including beef production and animal/grass complex
R. S. Tayler, B.Sc.: crop production; irrigation studies
R. W. Willey, B.Sc.: crop production; population and competition studies in cereals; continuous cereal production

AGRICULTURAL BOTANY

- A. H. Bunting, M.Sc., D.Phil., *Professor of Agricultural Botany*: crop physiology and agronomy; ecology applied to agricultural problems
Miss Phyllis M. Cartwright, B.Sc., Ph.D.: growth physiology of crops; physiology of root nodule formation in legumes
D. S. H. Drennan, B.Sc., Ph.D.: growth physiology of field crops
J. Elston, B.Sc., Ph.D.: applied ecology; water use by crops
Miss Alice M. Evans, B.Sc., Ph.D.: genetics of induced polyploids in the herbage legumes; genetic and evolutionary aspects of species relationships in *Trifolium*, *Medicago* and *Lotus*
J. K. Jones, B.Sc., Ph.D.: cytogenetics in *Hordeae* and *Fragaria*
H. Owen, B.Sc., Ph.D., A.I.C.T.A.: physiology of parasitism in fungi, especially *Rhynchosporium spp.*
G. D. Rowley, B.Sc.: experimental taxonomy of *Rosa* and succulent plants
D. Snow, B.Sc., Ph.D.: physiology of pathogenic fungi; spore germination; root nodule formation in legumes

AGRICULTURAL ECONOMICS

7 Redlands Road, Reading. Tel.: Reading 81779

- R. H. Tuck, M.A., *Professor of Agricultural Economics*: economic theory of long term agricultural development
L. G. Bennett, Ph.D., Dip.Hort.: institutional aspects of food marketing
H. Casey: the use of Linear Programming in economic theory
R. S. Cook: economics of milk production
I. B. Gardiner, B.Sc.Agr.: economics of joint use of machinery; economics of beef production
A. K. Giles, B.Sc.Econ.: control techniques and labour relations in farm management
A. H. Gill, B.Sc.: inter-farm pooling of resources and joint farming methods
A. Harrison, M.A., M.Sc.: capital formation and investment decisions in farming
C. A. Jewell, B.Sc.: agricultural development in 19th century England
E. M. Low, M.A.: agricultural price analysis; poultry economics
J. S. Marsh, M.A.: developments in European trade in farm products
F. D. Mills, Ph.D., B.A., M.S.: labour and marketing organizations in British agriculture
D. S. Thornton, Ph.D., B.Sc.Agr., B.A.: agricultural economics in under-developed countries
G. A. Urquhart, M.A., M.Sc.: mobility of agricultural labour in Europe

APPLIED STATISTICS

- R. N. Curnow, B.A., Ph.D., *Reader*: exploration of response surfaces; statistical genetics; planning of selection and screening programmes

- J. K. Brookhouse, B.Sc., Ph.D.: linear and dynamic programming; computer programmes for analysing experimental and survey data; the use of the likelihood function in statistical inference
- M. L. Tiku, M.A., Ph.D.: robustness of analysis of variance procedures; approximations to sampling distributions; order statistics
- P. R. Freeman, M.A.: growth analysis; multivariate statistical analysis; sequential analysis

DAIRYING (and Food Science)

- E. L. Crossley, B.Sc., F.R.I.C., *Professor of Dairying*: microbiological properties of evaporated milk, dried milk and cream
- E. C. Apling, B.Sc., F.R.I.C.: flour milling and baking processes
- Miss Judith O. Leggett, B.Sc.: microbiological control of food manufacture
- J. Rothwell, B.Sc. Dairying: physical properties of cream and of ice cream
- R. Scott, B.Sc.Agr., N.D.A., N.D.D.: cheese-making processes

HORTICULTURE

- O. V. S. Heath, D.Sc., F.R.S., *Professor of Horticulture*: developmental physiology and growth substances; photosynthesis, respiration and stomatal physiology
- W. R. Buckley, M.Sc.: wilt diseases of soft fruit
- G. P. Harris, Ph.D.: developmental physiology of glasshouse flower crops; initiation of roots and buds
- H. Meidner, Ph.D.: water relations; photosynthesis, respiration and stomatal physiology
- Mrs. D. Prue, Ph.D.: developmental physiology; effects of wavelength of light
- H. F. van Emden, Ph.D.: interrelations of insects and plants

MICROBIOLOGY

- B. C. J. G. Knight, D.Sc., *Professor of Microbiology*: general microbiology
- R. M. Keddie, B.Sc., Ph.D.: physiology of coryneform bacteria; Myxobacteria; *Caryophanon*
- L. J. Zatman, B.Sc., Ph.D., F.R.I.C.: C₁ metabolism (non-photosynthetic) in bacteria; metabolism of *cis* and *trans* isomers by bacteria
- Miss Eve Billing, B.Sc. Dairying, Ph.D., Dip.Bact.: phytopathogenic pseudomonads and their phages
- H. P. Charles, B.Sc., Ph.D.: biochemical genetics of *Neurospora*; plasmids in bacteria
- R. W. A. Park, B.Sc., Ph.D.: *Vibrio*: environmental changes affecting bacterial morphology
- A. I. Tiffin, B.Sc., Ph.D., A.R.I.C.: serology, antigens of cell walls

PHYSIOLOGICAL CHEMISTRY

- C. Tyler, D.Sc., Ph.D., F.R.I.C., *Professor of Physiological Chemistry*: mineral metabolism of poultry and egg shell characteristics
- D. A. Balch, B.Sc.Agr., Ph.D.: organic matter of egg shells
- F. H. Grimbleby, B.Sc., Ph.D., F.R.I.C.: heat stability of milk
- K. A. Hassall, B.Sc., Ph.D., A.R.I.C.: effect of metals on algal metabolism
- T. G. Taylor, M.A., Ph.D.: mineral metabolism of poultry, hormone and enzyme studies on poultry

SOIL SCIENCE

- E. W. Russell, C.M.G., M.A., Ph.D., *Professor of Soil Science*
- A. Wild, B.Sc., Ph.D.: soil phosphates, particularly organic phosphates in the soil solution
- J. B. Dalrymple, B.Sc., M.Sc., Ph.D.: soil micromorphology, land form analysis with their associated catenary soil sequences

UNITED KINGDOM

- P. J. Harris, M.Sc., Ph.D.: ecology of micro-organisms in different soil micro-habitats
D. Payne, M.A.: soil suction and soil structure
D. L. Rowell, B.Sc., D.Phil.: effects of iron oxides on swelling of clays and their movement in profiles
J. S. Waid, B.Sc., D.Phil.: effect of free living soil micro-organisms on growth and nutrition of higher plants

A.R.C. Unit of Flower Crop Physiology, see page 20

UNIVERSITY OF SHEFFIELD

Sheffield, 10. Tel.: 78555

BOTANY

- A. R. Clapham, M.A., Ph.D. (Cantab.), F.R.S., *Professor*: ecology and taxonomy of British plants
J. L. Harley, M.A., D.Phil. (Oxon.), F.R.S., *Professor*: physiology of absorption of nutrients; ecology and physiology of Mycorrhiza
A. Booth, B.Sc., Ph.D. (Manc.), *Lecturer*: developmental physiology with particular reference to hormones
R. C. Cooke, B.Sc., Ph.D. (Birm.), *Lecturer*: physiology of sclerotial germination in plant parasitic fungi; translocation in fungi
T. T. Elkington, B.Sc., Ph.D. (Dunelm), *Lecturer*: experimental taxonomy of British montane plants
J. P. Grime, B.Sc., Ph.D. (Sheff.): experimental ecology with special reference to lime-chlorosis and shade tolerance
P. S. Lloyd, M.A., Ph.D. (Cantab.): ecological importance of fire in limestone grasslands; experimental ecology of calcicoles
L. F. H. Merton, M.A. (Cantab.), *Lecturer*: ecology of British plants; vegetation of the humid tropics
I. H. Rorison, M.A., D.Phil. (Oxon.): experimental ecology with special reference to mineral nutrition and climate
J. Webster, B.Sc., Ph.D. (Lond.), *Reader*: ecology and taxonomy of fungi
H. W. Woolhouse, B.Sc. (R'dg.), Ph.D. (Adel.): experimental ecology; physiology of senescence

ZOOLOGY

- I. Chester Jones, D.Sc., Ph.D. (Liv.), *Professor*: form and function of the adrenal gland throughout the vertebrates; movement of water and electrolytes in fish
J. N. Ball, B.Sc., Ph.D. (Liv.), *Senior Lecturer*: endocrinology of fish
D. Bellamy, B.Sc. (Sheff.), D.Phil. (Oxon.), *Senior Lecturer*: metabolism of steroids in tissues
F. J. G. Ebling, M.Sc., Ph.D. (Brist.), *Reader*: experimental dermatology; influence of hormones on skin and hair; marine ecology
Miss P. A. Hale, B.Sc., Ph.D. (Belf.): experimental dermatology; influence of hormones on skin and hair
K. C. Highnam, M.Sc. (Manc.), Ph.D. (Sheff.), *Senior Lecturer*: insect endocrinology
L. Hill, B.Sc., Ph.D. (Sheff.), *Lecturer*: insect reproductive endocrinology
J. D. Jones, B.Sc. (Lond.), Ph.D. (Sheff.), *Senior Lecturer*: physiology of respiration in invertebrates, especially molluscs
O. Lusiš, Mag.Rer.Nat. (Riga), Ph.D. (Sheff.), *Lecturer*: histology and histochemistry of reproductive changes in molluscs and insects
W. Mordue, B.Sc., Ph.D. (Sheff.): insect reproductive endocrinology
F. Segrove, B.Sc., Ph.D. (Sheff.), *Senior Lecturer*: marine ecology

UNITED KINGDOM

- R. S. Smart, B.Sc., Ph.D. (Nott.), *Lecturer*: the molecular interaction of steroid hormones with macromolecular structures
L. Strong, B.Sc., Ph.D. (Sheff.): insect endocrinology
G. P. Vinson, B.Sc., Ph.D. (Sheff.), *Lecturer*: comparative aspects of steroid hormone biosynthesis

UNIVERSITY OF SOUTHAMPTON

Highfield, Southampton. Tel.: Southampton 56331

BOTANY

Vacant: *Professor*

- G. R. Lane, B.Sc., Ph.D., *Senior Lecturer*: cytology; radiation biology
Miss J. M. Lambert, M.A., Ph.D., *Reader*: ecology
J. G. Manners, M.A., Ph.D., *Senior Lecturer*: plant pathology
A. Myers, B.Sc., Ph.D.: plant biochemistry
L. Watson, B.Sc., M.Sc.: plant taxonomy

GEOGRAPHY

- F. J. Monkhouse, M.A., D.Sc., *Professor*: regional geography of Benelux; cartography
L. E. Tavener, M.A., Ph.D., *Reader*: agricultural geography of Hampshire and Dorset
R. G. Barry, B.A., M.Sc., Ph.D.: synoptic climatology and albedo investigation
B. P. Birch, M.A.: land classification and soil science
M. J. Clark, B.A., Ph.D.: slope analysis
R. J. Small, M.A., Ph.D.: sarsens of Marlborough Down; dry valleys in chalk

ZOOLOGY

- L. Brent, Ph.D., *Professor*: tissue transplantation immunology
L. G. E. Bell, Ph.D., *Reader*: biology of cell membranes
F. S. Billett, Ph.D.: differentiation of embryonic cells
A. G. Cock, Ph.D.: developmental genetics
M. J. Delany, M.Sc. (seconded to Makerere College): ecology of small mammals
W. J. Fairbairn, B.Sc.: freshwater ecology
G. Gowland, Ph.D.: tissue transplantation immunology
R. E. Hall, B.Sc., A.R.C.S.: general entomology
A. R. Hockley, B.Sc.: helminth parasites
N. Maclean, Ph.D.: role of nucleic acids
Mrs. M. Ord, Ph.D.: site of action of carcinogens
A. E. Wild, Ph.D.: maternal-foetal relations

UNIVERSITY OF SUSSEX

Stanmer House, Stanmer, Brighton, Sussex. Tel.: Brighton 66755

School of Biological Sciences

- Prof. J. Maynard Smith, B.A., B.Sc.: physiology of ageing in *Drosophila*; population genetics and evolution theory
Prof. J. H. Sang, B.Sc., Ph.D.: developmental genetics of *Drosophila*, particularly as affected by nutrition
Prof. J. F. Sutcliffe, B.Sc., Ph.D., D.Sc.: plant physiology, with particular reference to the biochemistry of cell differentiation and active transport
N. S. Sutherland, M.A., D.Phil., *Professor of Experimental Psychology*: perception and learning mechanisms in animals

UNITED KINGDOM

- Prof. N. Symonds, B.A., B.Sc., Ph.D.: genetic and biochemical aspects of recombination in bacteria and bacterial viruses
R. J. Andrew, M.A., Ph.D.: development and organization of instinctive motivational systems
B. C. Goodwin, B.A., M.Sc., Ph.D.: dynamics of cellular control processes
M. S. Halliday, M.A., Ph.D.: fear and exploration in animals
W. R. A. Muntz, M.A., D.Phil.: physiological mechanisms of vision, particularly colour vision
K. A. Stacey, B.Sc., Ph.D.: biochemical studies on the nucleic acids of bacteria
D. T. Streeter, B.Sc.: physiological ecology of the Bryophyta
J. D. Thomas, B.Sc., Ph.D.: freshwater ecology with particular reference to ecology of helminth parasites and community structure

A.R.C. Unit of Nitrogen Fixation, see Page 21

UNIVERSITY COLLEGE OF WALES

Aberystwyth. Tel.: Aberystwyth 2346

Agriculture

ANIMAL HUSBANDRY

Tel.: Aberystwyth 7578

- J. E. Nichols, M.Sc., Ph.D., F.R.S.E., *Professor*: agriculture; ecological aspects of sheep and cattle husbandry; shelter/exposure relationships
A. T. H. Batten, B.V.Sc., M.R.C.V.S.: iodine metabolism and thyroid function in sheep
J. L. Lees, B.Sc.: reproductive performance and productive efficiency of rams and ewes; genetic and environmental factors affecting milk production
J. Lewis, M.Sc., N.D.D., *Director of the College Dairy*: efficiency of farm dairy equipment, including methods of sterilizing utensils
T. L. Powell, B.Sc.: shelter requirements of ruminants
Miss E. Richards, B.Sc., N.D.D.: factors affecting quality in cheese
K. B. Sinclair, Ph.D., M.V.Sc., M.R.C.V.S.: ruminant health and production; nutritional parasitic diseases

CROP HUSBANDRY

Tel.: Aberystwyth 3711

- W. Ellison, B.Sc., Ph.D., *Professor*: agriculture; marginal land problems; leys in upland areas; pasture improvement
R. S. Edwards, B.Sc., Ph.D.: agriculture, effects of seed-bed tilth on establishment and yield of crop plants; frost heaving of cultivated soils; measurement of wind-borne salt and its effects on crop plants
J. L. Hammerton, B.Sc., Ph.D.: agriculture; use of herbicides in grassland improvement; weed control in kale; ecological and physiological studies of weeds of genus *Polygonum*
I. B. Warboys, B.Sc.: agricultural machinery; mechanization of upland farms; improved pasture establishment techniques

Agricultural Biochemistry

- T. W. Goodwin, D.Sc., F.R.I.C., *Professor*: vitamin biosynthesis; photosynthesis; seed germination
W. A. Adams, B.Sc.: aspects of animal nutrition
W. M. Ashton, B.Sc., Ph.D., F.R.I.C.: animal nutrition
B. H. Davies, B.Sc., Ph.D., A.R.I.C.: plant carotenoids
J. T. O. Kirk, Ph.D.: biochemistry of plastids

- E. I. Mercer, B.Sc., Ph.D., A.R.I.C.: plant sulpholipids and plant sterols
 L. J. Rogers, Ph.D., A.R.I.C.: plant lipoproteins
 V. I. Stewart, Ph.D.: soil studies in relation to productivity
 D. R. Threfall, Ph.D.: plant quinones
 P. W. Trudgill, Ph.D.: microbiological degradation of terpenes

Agricultural Botany

- P. T. Thomas, B.Sc., Ph.D., *Professor*: cytology of crop plants
 J. N. Davies, B.Sc.: competition studies in cereals
 A. Durrant, B.Sc., Ph.D.: biometrical genetics; studies on genotype environment interactions
 Ellis Griffiths, M.Sc., Ph.D.: plant pathology, microbiology, ecology of soil micro-organisms with particular reference to organic matter decomposition and soil structure
 D. B. James, M.Sc.: the nature and inheritance of physiological factors which influence the distribution of grasses
 D. G. Jones, B.Sc., Ph.D.: the Rhizobium/legume symbiosis
 H. Rees, D.Sc., Ph.D.: genetic control of chromosome behaviour; micro-spectrometry of chromosomes; genetics of physiological variation in cereals

Agricultural Economics

Tel.: Aberystwyth 3711

- H. T. Williams, B.A., *Professor*: agricultural policy; structure and organization of agriculture
 D. I. Bateman, M.A.: agriculture in the regional economy; the use of agricultural land for outdoor recreation
 R. D. Crotty, M.Sc.Econ.: the mobility of resource use in Welsh agriculture; an econometric model showing the determination of cow numbers and the price of young cattle in Ireland
 M. H. Dummer, B.A.: economic problems in hill farming areas; sociological problems of economic development in rural areas
 D. H. Evans, M.Sc.: economic studies of agriculture in developing countries, with special reference to trade and employment
 D. F. P. Gwynne, B.Sc.: econometric analysis of production, supply and demand in certain sections of British agriculture
 M. B. Jawetz, B.Com., M.Sc., Ph.D.: size and efficiency of farms, economics of feeding dairy cows, stocking density, intensity of output and profitability of dairy cows and replacements and of cattle and sheep
 W. D. Jones, M.Sc.: the economics of table-poultry production; the effects of public works schemes on agriculture

Welsh Plant Breeding Station—see State-aided Research Institutes, page 94

UNIVERSITY COLLEGE OF NORTH WALES

Bangor, Caernarvonshire

FORESTRY

Tel.: Bangor 3641

- E. C. Mobbs, C.B.E., M.A., B.Sc., F.S.F., *Professor*: natural regeneration of exotic conifers; development of various species under conditions of exposure and high elevation; shelterbelts
 C. G. Dobbs, Ph.D., A.R.C.S.: soil mycology; tree ring analysis
 G. K. Elliot, B.Sc., M.F., A.S.F., F.I.W.Sc.: wood science; growth structure relationships; utilization of forest produce
 E. R. Huggard, M.A., B.A.I., A.M.I.C.E., F.S.F.: timber extraction systems

UNITED KINGDOM

- D. Kinloch, B.Sc., A.S.F.: forest management; site assessment
T. H. Owen, B.Sc., F.S.F.: afforestation; conversion of derelict woodlands; amenity
J. B. Scarratt, B.Sc., A.S.F.: natural regeneration of exotic conifers

ZOOLOGY

Tel.: Bangor 3225

- F. W. Rogers Brambell, C.B.E., B.A., D.Sc., F.R.S., *Professor*: transmission of immunity
R. McN. Alexander, M.A., Ph.D.: morphology of cypriniform fish; mechanical properties of animal materials
R. A. Beaver, M.A., D.Phil.: insect population ecology
L. H. Jackson, B.Sc.: marine biology
W. C. Jones, M.A., Ph.D.: physiology and growth of sponges
P. O'Donald, M.A., Ph.D. (Cantab.): ecological genetics; models of populations in computers
T. B. Reynoldson, D.Sc.: taxonomy and ecology of freshwater triclads
N. W. Runham, Ph.D.: histochemistry of molluscs

School of Agriculture

Tel.: Bangor 2771

AGRICULTURE

- I. A. M. Lucas, B.Sc., M.Sc., *Professor*: animal nutrition
M. B. Alcock, B.Sc., Ph.D.: growth and environmental studies with grassland; growth regulators for cereals
W. Brown, B.Sc., M.S.: shelter for hill sheep
A. G. Chamberlain, B.Sc., Ph.D.: pig nutrition; biochemical polymorphism in pigs
G. M. Davies, B.Sc., Ph.D.: reclamation of upland grazings; beef production
R. W. Howarth, M.A.: capital in North Wales agriculture
P. G. James, M.A., Ph.D.: economic aspects of multiple land use
R. M. MacIver, B.Sc.: pig selection; immunogenetics
G. L. Williams, B.Sc., M.Sc.: breeding and nutrition of hill sheep

AGRICULTURAL BOTANY

- J. L. Harper, M.A., D.Phil. (Oxon.), *Professor*: evolutionary ecology; seed-soil relationships; plant competition
J. Antonovics, B.A. (Cantab.): evolutionary genetics of metal tolerance in plants; evolution of species interrelationships in experimental populations
A. D. Bradshaw, M.A., Ph.D. (Cantab.), *Reader*: evolution in plant populations
P. H. Lovell, B.Sc., Ph.D. (Sheff.): developmental physiology and morphology in *Solanum tuberosum* L.
D. Machin, M.Sc. (Newcastle): experimental design
C. Marshall, B.Sc. (Nott.): translocation in grasses; physiology of diseased plants
S. Matthews, B.Sc. (Leeds): factors influencing pre-emergence mortality in *Pisum sativum*
G. R. Sagar, M.A., D.Phil. (Oxon.): translocation of C¹⁴ compounds; weed control; population dynamics
R. Whitbread, Ph.D. (Cantab.): physiology of diseased plants; bacterial diseases; heavy metal tolerance in micro-organisms
D. Wynn Parry, M.Sc. (Wales): opaline silica deposits in the Gramineae

BIOCHEMISTRY AND SOIL SCIENCE

- W. C. Evans, M.Sc., Ph.D., F.R.I.C., F.I.Biol., *Professor*: biochemistry; effects of certain plant constituents on farm animal health (e.g. cattle bracken poisoning); metabolism of plant phenolics and pesticides by soil micro-organisms

- R. F. E. Axford, M.A., Vet.M.B., M.R.C.V.S.: animal physiology and nutrition; mineral metabolism in ruminants
- R. I. Davies, M.Sc., A.R.I.C.: soil chemistry; pedogenesis—role of leaf leachates and organic matter in the mobilization of ions in soil; nutrient status of soils
- R. A. Evans, M.Sc., A.R.I.C.: biochemistry; application of automated analytical techniques to the study of biochemical processes in the intact animal (e.g. energy and nitrogen metabolism of farm animals)
- Mrs. I. Antice Evans, Ph.D.: cell biology; connective tissue and blood, including immunological studies, applied to farm animal health problems
- J. K. Gaunt, Ph.D.: biochemistry; metabolism and mode of action of plant growth regulators
- D. A. Jenkins, M.A., Ph.D.: geochemistry; soil micro-morphology and mineralogy
- D. L. Laidman, Ph.D.: biochemistry; metabolic changes during germination in cereals; lipid biochemistry
- F. Smithson, D.Sc.: soil mineralogy; microscopic studies of rocks, soils and vegetation (phytoliths)
- A. J. Thomas, M.A., Ph.D.: biochemistry; application of automated analytical techniques to the study of biochemical processes in the intact animal (e.g. energy and nitrogen metabolism of farm animals)

AGRICULTURAL AND FOREST ZOOLOGY

- J. Hobart, B.Sc., *Senior Lecturer in Charge*: soil faunal studies; forest pests
- J. M. Cherrett, Ph.D.: terrestrial arthropod ecology with special reference to Araneae, Coccidae and Formicidae
- J. B. Ford, Ph.D.: nutrition and metabolism of insects; uptake of insecticides
- I. V. Herbert, Ph.D.: pathogenesis and immunological mechanisms of helminth invasion in pigs; *in vitro* culture of Trypanosomidae
- Mrs. M. J. Morgan, M.Sc.: biology of Curculionidae, Chironomidae and Lepidoptera
- A. J. Probert, Ph.D.: histochemistry of helminths parasitic in domestic stock

A.R.C. Unit of Embryology, see page 19

UNIVERSITY COLLEGE OF SOUTH WALES
AND MONMOUTHSHIRE

Cathays Park, Cardiff. Tel.: Cardiff 20781

BOTANY

- S. E. Arney, M.A. (Oxon.): control of flowering and elongation growth in the strawberry plant
- Mrs. M. S. Percival, Ph.D. (Wales): floral biology; pollination mechanisms and insects—flower relationships

UNIVERSITY COLLEGE OF SWANSEA

Singleton Park, Swansea. Tel.: Swansea 25678

BOTANY

- H. E. Street, D.Sc. (Lond.), *Professor of Botany*: root physiology cell division; differentiation and organogenesis in plant tissue cultures
- E. G. Brown, B.Sc., Ph.D. (Liv.), F.R.I.C.: biochemistry of purine and pyrimidine derivatives in plants
- G. T. Goodman, M.Sc. (Wales): mineral nutrients in ecology, ecological aspects of recolonization of industrially derelict land
- I. Isaac, D.Sc. (Wales), Ph.D. (Cantab.), *Reader in Plant Pathology*: taxonomy, physiology and phytopathology of species of *Verticillium*

UNITED KINGDOM

- Q. O. N. Kay, B.A., D.Phil. (Oxon.): biosystematics and ecology of annual weeds
H. Opik, B.Sc. (Belf.), Ph.D. (Manc.): changes in fine structure and physiology in germinating seedlings

CHEMISTRY

- C. H. Hassall, M.Sc. (N.Z.), Ph.D. (Cantab.), F.R.I.C., *Professor of Chemistry*: microbiological chemistry, biosynthesis studies
J. D. Levi, B.Sc. (Lond.), Ph.D. (Wales), M.I.Biol.: micro-biological chemistry; chemical genetics

ZOOLOGY

- P. E. King, B.Sc., Ph.D. (Hull): biology of Chalcidoidea and Coleoptera Aedeptera; egg production in insects
P. Makings, B.Sc., Ph.D. (Lond.): oviposition behaviour of Lepidoptera; thermoreception in locusts

UNIVERSITY OF YORK

Heslington, York. Tel.: York 59861

BIOLOGY

- M. H. Williamson, M.A., D.Phil., *Professor and Head of Department*: population studies
J. R. Bronk, A.B., D.Phil., *Professor of Biochemistry*: oxidative phosphorylation
M. J. Chadwick, B.Sc., M.A., Ph.D.: mineral nutritional studies as applied to plant ecology
Miss R. M. Leech, M.A., D.Phil.: structure and function of chloroplasts
R. A. Wilson, B.Sc., Ph.D.: physiology of trematode larvae

STATE-AIDED RESEARCH INSTITUTES

Agricultural and Horticultural Research Station Long Ashton (University of Bristol)

Bristol. Tel.: Long Ashton 2181

- Prof. H. G. H. Kearns, O.B.E., B.Sc., Ph.D., Dip.Agr., F.I.Biol., *Director*
J. T. Martin, D.Sc., Ph.D., F.R.I.C., *Assistant Director*

CHEMISTRY: ANALYTICAL & GENERAL

- J. T. Martin, D.Sc., Ph.D., F.R.I.C., *Head of Section*
D. V. Richmond, M.Sc., D.H.S., A.R.I.C.: mechanism of fungicidal action
E. J. Skerrett, Ph.D., A.R.I.C.: analytical methods
E. Somers, M.Sc., Ph.D.: mechanism of fungicidal action

CHEMISTRY: ORGANIC

- D. Woodcock, D.Sc., Ph.D., F.R.I.C., *Head of Section*: fungal metabolism
D. R. Clifford, L.R.I.C.: chemical structure and biological activity
J. K. Faulkner, M.Sc., Ph.D., A.R.I.C.: metabolism of organic compounds by fungi
D. A. M. Watkins, B.Sc., Ph.D., A.R.I.C.: host resistance to fungi

CHEMISTRY: PHYSICAL

- W. D. E. Thomas, B.Sc., Ph.D., F.R.I.C., *Head of Section*
C. P. Lloyd-Jones, B.Sc., A.R.I.C.: radioactive tracers

CIDER AND FRUIT JUICES

A. Pollard, M.Sc., Ph.D.: *Head of Section*

F. W. Beech, B.Sc., Ph.D., A.R.I.C., F.I.Biol.: microbiology of cider yeasts

L. F. Burroughs, B.Sc., Ph.D., F.R.I.C., F.I.Biol.: chemistry of fermentation

J. G. Carr, B.Sc., Ph.D., F.I.Biol.: microbiology of cider bacteria

Miss M. E. Kieser, B.Sc., A.R.I.C.: chemistry of fruit juices

C. F. Timberlake, M.Sc., Ph.D., A.R.I.C.: metallic complexes in fruit products

G. C. Whiting, B.Sc., Ph.D.: biochemistry of fermentation

DOMESTIC FOOD PRESERVATION

Miss M. Leach, N.D.P.: *Head of Section*

ENTOMOLOGY

Prof. H. G. H. Kearns, O.B.E., B.Sc., Ph.D., Dip.Agr., F.I.Biol., *Head of Section*

H. R. Mapother, B.A., B.Sc., A.R.I.C.: spray materials for tropical crops

N. G. Morgan, B.Sc., Ph.D.: techniques of spray application

B. D. Smith, B.Sc., Ph.D., D.I.C.: insect pests of black currants

A. Stringer, B.Sc., A.R.C.S.: insect ecology

NUTRITION OF FRUIT PLANTS

C. Bould, M.Sc., Ph.D., *Head of Section*: foliar diagnosis

E. G. Bradfield, M.Sc., F.R.I.C.: analytical methods

D. G. Hill-Cottingham, M.Sc., Ph.D., A.R.I.C.: nitrogen metabolism

R. A. Webb, B.A., D.Phil.: trace elements in fruit crops

PLANT CONSTITUENTS

A. H. Williams, M.A., B.Sc., *Head of Section*: phenolics in fruit trees

J. S. Challice, L.R.I.C.: phenolics in fruit trees

PLANT PATHOLOGY

R. J. W. Byrde, B.Sc.Hort., Ph.D., *Head of Section*: bio-assay of fungicides

A. T. K. Corke, B.Sc., Ph.D.: perennation of fruit-disease fungi

E. C. Hislop, B.Sc., D.P.P.: fungicides redistribution; leaf microflora

PLANT PHYSIOLOGY

E. J. Hewitt, B.Sc., Ph.D., A.K.C., F.I.Biol., *Head of Section*: mineral nutrition and metabolism of higher plants

A. J. Abbott, M.Sc., Dip.Hort.: nutrition of excised tissues

D. P. Hucklesby, M.Sc.: inorganic nitrogen metabolism

B. A. Notton, M.Sc., A.R.I.C.: inorganic nitrogen metabolism

POMOLOGY & PLANT BREEDING

L. C. Luckwill, B.Sc., Ph.D., *Head of Section*: growth substances and fruit tree viruses

D. L. Abbott, B.Sc.: physiology of fruit plants

Miss J. E. Adam, B.Sc.Hort.: black currant breeding; seed germination

A. I. Campbell, N.D.H.Hons.: apple and pear viruses; propagation

E. W. Hobbs, M.B.E., B.Sc., N.D.H.: plantations management

Miss B. A. Rake, B.Sc., N.D.H.: gooseberry culture

R. R. Williams, B.Sc., Dip.Hort.Sc.: cider-fruit growing; pollination studies

D. Wilson, B.Sc., Ph.D.: breeding of currants and strawberries

SCIENTIFIC LIAISON

C. V. Cutting, B.Sc., Ph.D., F.R.I.C., *Head of Section*

UNITED KINGDOM

STATISTICS

- G. M. Clarke, M.A., Dip.Stat., *Head of Section*: design and analysis of experiments; biometry
Miss M. E. Holgate, M.A.: design and analysis of experiments; biometry

WILLOWS

- K. G. Stott, B.Sc., *Head of Section*

The Animal Virus Research Institute

Pirbright, Woking, Surrey. Tel.: Worplesdon 2441-6. Cables: Research, Pirbright

- J. B. Brooksby, D.Sc., Ph.D., M.R.C.V.S., *Director*
R. F. Sellers, M.A., Ph.D., B.Sc., M.R.C.V.S., *Deputy Director*

ARBOVIRUSES

- R. F. Sellers, M.A., Ph.D., B.Sc., M.R.C.V.S., *Head of Section*: growth and transmission of arboviruses
D. A. Barr, B.V.Sc., M.Sc., M.R.C.V.S.: mechanisms of virus attenuation
J. P. T. Boorman, M.A.: entomological aspects of arboviruses
G. N. Mowat, Ph.D., M.R.C.V.S.: mechanism of attenuation and studies on growth of viruses

BIOCHEMISTRY AND BIOPHYSICS

- F. Brown, M.Sc., Ph.D., *Head of Section*: mechanism of virus replication
Miss J. Crick, M.Sc.: interference phenomena
S. J. Martin, M.Sc., Ph.D.: mechanism of virus replication
R. E. Warrington, B.A.: biophysical study of virus
T. F. Wild, B.Sc.: synthesis of virus components
J. N. Wilson, M.Sc., Ph.D.: effect of viral RNA on cell metabolism

EPIDEMIOLOGY AND WORLD REFERENCE LABORATORY

- J. Davie, B.Sc., M.R.C.V.S., *Head of Section*: epidemiological surveys and characterization of virus subtypes in foot-and-mouth disease
Mrs. M. Capel-Edwards, B.Sc.: subtype variation
R. S. Hedger, M.R.C.V.S.: epidemiology in endemic areas

GENETICS

- C. R. Pringle, B.Sc., Ph.D.: genetics of viruses—recombination studies

PATHOLOGY AND EXPERIMENTAL CYTOLOGY

- H. Platt, M.V.Sc., Ph.D., M.R.C.V.S., *Head of Section*: nature of cellular susceptibility to viruses; biology of epidermal cells
D. J. Rowlands, B.Sc.: lysosomes in virus-infected cells

SWINE FEVER VIRUSES

- W. Plowright, D.V.S., M.R.C.V.S., *Head of Section*: studies on African swine fever
J. Parker, B.Vet.Med., M.R.C.V.S.: serological and cultural studies on African swine fever

TISSUE CULTURE

- P. B. Capstick, B.V.M.S., M.R.C.V.S., *Head of Section*: virus growth in tissue culture; growth of cells in suspension
P. J. Crossman, B.Vet.Med., M.R.C.V.S.: virus growth in suspended cells
R. C. Telling, M.I.Biol., F.I.M.L.T.: plant for culture of cells in suspension

VACCINES

H. H. Skinner, M.R.C.V.S., *Head of Section*

Attenuated Vaccines

H. H. Skinner, M.R.C.V.S.: development and assessment of attenuated strain vaccines

R. Burrows, B.Sc., M.R.C.V.S.: virus-host relationships; the carrier state; vaccination of pigs

D. R. Williams, B.Vet.Med., M.R.C.V.S.: development and assessment of attenuated strain vaccines

Inactivated Vaccines

N. St. G. Hyslop, M.V.Sc., M.R.C.V.S., D.T.V.M., *in charge*: control techniques in production of inactivated vaccines; estimation of potency

R. H. Fagg, B.V.Sc., M.R.C.V.S.: inactivation techniques and assessment of inactivated vaccines

A. W. Morrow, M.A., B.Sc.: pilot plant study; preparation of inactivated vaccines

East Malling Research Station

East Malling, Maidstone, Kent. Tel.: West Malling 3033. Cables: Research, East Malling

F. R. Tubbs, C.B.E., M.Sc., Ph.D., A.R.C.S., D.I.C., F.I.Biol., F.L.S., *Director*

H. B. S. Montgomery, B.A., Ph.D., D.I.C., F.I.Biol., *Assistant to Director*

ENTOMOLOGY

G. H. L. Dicker, Ph.D., A.R.C.S., *Head of Section*: aphids; control of fruit pests

J. B. Briggs, B.Sc.Hort., M.Sc.: insect and mite studies in relation to breeding resistant varieties of fruit

R. C. Muir, B.Sc.: damson-hop aphid

R. S. Pitcher, Ph.D., Dip.Agr., Dip.Ent.: nematodes associated with fruits

Miss L. K. Ward, B.Sc.: ecological studies of fauna of fruit trees

FRUIT BREEDING

R. L. Knight, O.B.E., D.Sc., Ph.D., A.I.C.T.A., Dip.Agr., F.I.Biol., *Head of Section*: fruit breeding

Miss E. Keep, B.Sc.Hort.: fruit breeding, cytology

FRUIT NUTRITION

D. W. P. Greenham, M.A., Ph.D., *Head of Section*: mineral nutrition of fruit plants; manuring and soil management

M. Allen, Ph.D.: uptake from foliar sprays and soil; mineral content of leaves

Miss A. V. Delap, B.A., B.Sc., Ph.D.: sand culture; seasonal nitrogen requirement

Miss E. M. Ford, Ph.D., A.R.C.S.: magnesium nutrition

J. E. Goode, B.Sc.: water relationships; nitrogen

FRUIT STORAGE INVESTIGATIONS

(in collaboration with Ditton Laboratory)

H. B. S. Montgomery, B.A., Ph.D., D.I.C., F.I.Biol., *Head of Section*: effect of field factors

R. O. Sharples, B.Sc., Ph.D.: anatomical and physiological development of apples

PLANT PATHOLOGY

A. F. Posnette, M.A., Sc.D., Ph.D., A.I.C.T.A., F.I.Biol., *Head of Section*: virus diseases

J. E. Crosse, B.Sc., Ph.D., *Deputy Head of Section*: bacterial diseases, bacteriophages

UNITED KINGDOM

- Miss M. Bennett, B.Sc.Hort., M.Sc., Dip.Hort.: plum silver leaf; plantation experiments; pathology records
K. R. Bock, Ph.D., A.R.C.S.: virus diseases of hops
R. T. Burchill, B.Sc., Ph.D.: air-borne fungal diseases, apple scab, mildew, gloeosporium fruit rots
R. Cropley, N.D.H., Dip.Hort.: virus diseases of fruit trees
R. C. Hignett, Ph.D.: biochemistry of host-pathogen relations
D. S. Kirkham, Ph.D.: apple and pear scab; physiology of parasitism
J. T. Legg, B.Sc., Ph.D.: diseases of tropical crops
M. H. Moore, M.Sc., Ph.D., Dip.Hort.: fungal diseases of fruit plants; fungicides
G. W. F. Sewell, Ph.D.: soil-borne fungal diseases
P. W. Talboys, Ph.D., D.I.C.: verticillium wilts; physiology of parasitism
J. M. Thresh, B.Sc., A.R.C.S.: virus diseases of *Ribes*
J. F. Wilson, B.Sc.: hop verticillium wilt, field studies

PLANT PHYSIOLOGY

- H. W. B. Barlow, B.Sc., *Head of Section*: studies on tree growth and cropping; growth regulators; shoot morphology
D. J. Avery, Ph.D., A.R.C.S., D.I.C.: CO₂ exchange; nett assimilation
R. M. Fulford, B.Sc., Ph.D.: analysis of fruiting, irregular cropping
O. P. Jones, Ph.D.: culture of isolated plant organs
H. J. Lacey, M.Sc.: growth regulators, extraction and bioassay
F. W. M. Llewellyn, Ph.D., A.R.C.S., D.I.C.: effect of sprays on leaf, growth and crop
C. A. Priestley, M.A., Ph.D., D.I.C.: carbohydrate storage and use
J. D. Quinlan, Ph.D.: competition between shoot-growth and fruits; transport of carbohydrate

PLANT PROTECTIVE CHEMISTRY

- A. H. M. Kirby, M.Sc., Ph.D., F.R.I.C., *Head of Section*: chemical structure in relation to biological activity
L. D. Hunter, B.Sc., A.R.I.C.: organic synthesis and mode of action, fungicides and bactericides
R. P. Tew, F.R.I.C.: assay of spray deposits and residues, analytical methods

POMOLOGY

- W. S. Rogers, M.A., D.Sc., Dip.Hort., A.Inst.P., F.I.Biol., *Head of Section*: rootstocks; root studies; strawberries
Miss A. B. Beakbane, Ph.D., N.D.H.: histology; culture of *Rubus*
R. J. Garner, M.Sc., N.D.H., Dip.Hort.: propagation; cherry rootstocks
Miss E. M. Glenn, B.Sc.: field records; plum rootstocks
G. C. Head, B.Sc.: root studies
B. H. Howard, Ph.D.: propagation
J. E. Jackson, Ph.D.: variation in fruit development
Miss I. Modlibowska, Ph.D.: frost studies; growth regulators
M. S. Parry, M.A.: apple and pear rootstocks; outstation trials
A. P. Preston, N.D.H.: apple rootstocks, pruning

SCIENTIFIC LIAISON

- H. B. S. Montgomery, B.A., Ph.D., D.I.C., F.I.Biol., *Head of Section*
J. H. Walker, B.Sc.

STATISTICS

- S. C. Pearce, Ph.D., *Head of Section*: experimental design; plant variation; computer programmes
N. A. Goodchild, Ph.D.: cultural experiments

- D. A. Holland, B.Sc.: nutritional experiments
 D. H. Rees, B.Sc.Econ.: experiments on pests and diseases; computer programmes
 P. Sprent, B.Sc.: growth relations

Glasshouse Crops Research Institute

Worthing Road, Rustington, Littlehampton, Sussex. Tel.: Littlehampton 1414

The work of the Institute covers not only glasshouse crops but also mushrooms, and bulbs, flowers and shrubs grown in the open.

F. W. Toovey, O.B.E., B.Sc., A.R.C.S., A.I.C.T.A., F.I.Biol., *Director*
 G. F. Sheard, M.Sc., F.I.Biol., *Scientific Liaison Officer*

CHEMISTRY

- G. W. Winsor, B.Sc., Ph.D., A.R.I.C., D.I.C., *Head of Department*: soils and plant nutrition; tomato fruit quality
 J. N. Davies, B.Sc., Ph.D.: organic plant constituents
 G. E. Hobson, M.Sc., Ph.D., A.R.I.C.: plant biochemistry; enzymes and mitochondria in tomato fruit
 D. M. Massey, B.Sc.: soil salinity

CROP PROTECTION

- W. H. Read, M.Sc., F.R.I.C., *Head of Department*: chemical control of pests and diseases; soil sterilization
 C. R. Worthing, B.Sc., M.A., D.Phil.: uptake, translocation and metabolism of systemic pesticides

HORTICULTURE

- G. F. Sheard, M.Sc., F.I.Biol., *Head of Department*
 A. C. Bunt, N.D.H.: loamless composts; plant containers; carnation culture
 A. Calvert: inflorescence development and fertilization problems in the tomato
 A. J. Cooper, B.Sc., Ph.D.: tomato growth control and ripening disorders
 P. B. Flegg, B.Sc., A.R.I.C.: mushroom culture, particularly effect of environment
 Z. J. Kulwiec, Dott. Science Forestali (Florence): flower keeping quality

PLANT BREEDING

- L. A. Darby, B.Sc., *Head of Department*: tomato, cucumber, lettuce, anemone
 J. Pelham, M.A.: tomato disease resistance; mushroom
 J. W. M. Smith: tomato rootstocks; lettuce
 H. C. Harries, B.Sc.: tomato wilt resistance and earliness of fruiting

ENTOMOLOGY

- N. W. Hussey, B.Sc., Ph.D., *Head of Department*: glasshouse red spider mite; mushroom phorids; biological control
 Miss B. Gurney: mushroom and bulb mites
 W. H. Parr, M.I.Biol.: glasshouse red spider mite
 I. J. Wyatt, B.Sc., Dip.Agr.Sc., D.T.A. (Trin.): mushroom pests, particularly Cecidomyiidae; chrysanthemum aphids

MYCOLOGY AND BACTERIOLOGY

- F. T. Last, D.Sc., Ph.D., D.I.C., A.R.C.S., F.I.Biol., *Head of Department*: soil microbiology in relation to disease problems; mushroom diseases and composting
 Miss M. H. Ebben, M.A.: root diseases and carnation wilts

UNITED KINGDOM

- Miss D. G. Gandy, M.Sc.: mushroom diseases; chrysanthemum petal blight (*Itersonilia perplexans*)
W. A. Hayes, B.Sc., Ph.D., N.D.D.: mushroom nutrition and composting
D. Price, M.Sc.: bulb diseases
Miss P. M. Smith, B.Sc.: control of diseases of glasshouse and ornamental plants

NEMATOLOGY

- J. J. Hesling, B.Sc., A.R.C.S., *Head of Section*: bulb eelworm (*Ditylenchus dipsaci*); mushroom eelworms
P. R. Ellis, B.Sc.: resistance in tomato to potato-root eelworm (*Heterodera rostochiensis*)

VIROLOGY

- M. Hollings, D.Sc., F.I.Biol., *Head of Department*: virus purification and serology; viruses of ornamentals and mushrooms
A. A. Brunt, B.Sc.: virus diseases of bulbs, dahlia and other ornamentals
Miss O. M. Stone, M.A., Ph.D.: viruses of ornamentals; meristem culture

PLANT PHYSIOLOGY

- R. G. Hurd, B.Sc., Ph.D.: carbon dioxide enrichment in glasshouses
*R. Nichols, M.Sc.: post-harvest physiology of cut flowers
A. R. Rees, B.Sc.: growth and flowering of ornamental bulbs

STATISTICS

- J. H. Gisborne, A.I.C.T.A., *Head of Section*: design and analysis of experiments

The Grassland Research Institute

- Hurley, Maidenhead, Berkshire. Tel.: Hurley 363
E. K. Woodford, O.B.E., M.Sc., Ph.D., D.I.C., F.I.Biol., *Director*
W. F. Raymond, M.A., F.R.I.C., *Deputy Director*
T. E. Williams, B.Sc., *Deputy Director*

ANIMAL PRODUCTION

- F. E. Alder, D.F.C., M.A., B.Sc., *Head of Department*
J. C. Tayler, M.A., Dip.Agr.: beef cattle—carcass quality

BIOCHEMISTRY AND ANIMAL NUTRITION

- W. F. Raymond, M.A., F.R.I.C., *Head of Department*: crop conservation
E. C. Jones, B.Sc., F.R.I.C. (E): analytical chemistry
D. F. Osbourn, B.Sc., Dip.Agr., Dip.Trop.Agr.: ruminant nutrition—intake studies
R. A. Terry, A.R.I.C.: biochemistry of silage
D. J. Thomson, B.Sc., Dip.Agr.: ruminant nutrition—nitrogen studies
J. M. A. Tilley, B.Sc., B.Sc.Econ., D.Phil. (on secondment to the Food and Agriculture Organization)

BIOMETRICS

- L. C. Chapas, B.Sc., Dip.Math.Stat., *Head of Department*
H. L. Back, B.Sc.

CROP PHYSIOLOGY

- R. C. Anslow, M.Sc.: defoliation and crop growth
L. Jones, B.Sc.: sward establishment
D. A. Lambert, B.Sc.: physiology of vegetative growth

*Temporarily seconded to Ditton Laboratory

PLANT INTRODUCTION AND CROP PRODUCTION

J. O. Green, M.Sc., *Head of Department*

J. Morrison, B.Sc.: evaluation of forage crops

ECOLOGY

C. R. W. Spedding, M.Sc., Ph.D., *Head of Department*

D. E. Eyles, M.Sc.: animal ecology—wool production

D. D. Kydd, M.A.: plant ecology—the growth of the grazed sward

R. V. Large, M.Sc.: animal ecology—food conversion efficiency in sheep

J. E. Newton, M.A., M.Sc.: animal ecology—reproduction in the ewe

T. T. Treacher, B.Sc.: animal ecology—lactation of sheep

SYSTEMS SYNTHESIS SECTION

J. G. W. Jones, B.Sc., Ph.D., *Head of Section*

R. D. Baker, M.Sc., C.D.F.M.: intensive beef production

MICROBIOLOGY

Miss E. Grossbard, B.Sc., Ph.D., D.I.C., *Head of Department*

PLANT PHYSIOLOGY

O. R. Jewiss, B.Sc., Ph.D., A.R.C.S., D.I.C., *Head of Department*

M. J. Robson, B.Sc., Ph.D.: leaf growth

G. J. A. Ryle, B.Sc., Ph.D.: inflorescence development

R. D. Williams, B.Sc., Ph.D.: nutrition, assimilation and metabolism

SOILS

T. E. Williams, B.Sc., *Head of Department*

C. R. Clement, B.Sc., Ph.D.: soil fertility

D. W. Cowling, B.Sc.: nitrogen supply to grassland

A. J. Heard, B.Sc.: plant/soil relationships

W. Stiles, M.Sc.: studies on soil water

D. C. Whitehead, B.Sc., Ph.D., A.R.I.C.: soil organic matter

Houghton Poultry Research Station

Houghton, Huntingdon. Tel.: St. Ives 3168

R. F. Gordon, D.Sc., M.R.C.V.S., *Director*: bacterial diseases in poultry

BACTERIOLOGY

E. G. Harry, M.Sc., B.Pharm., Ph.C.: aerial disinfection and hatchery hygiene

CLINICAL AND DIAGNOSIS

Routine diagnosis and clinical research

W. M. Goodchild, M.Sc., M.R.C.V.S.

C. C. Wannop, M.R.C.V.S.

HUSBANDRY

Miss D. M. Cooper, B.Sc.Agr.: poultry husbandry

LEUCOSIS

The avian leucosis complex and Marek's disease

P. M. Biggs, Ph.D., B.Sc., M.R.C.V.S.

R. C. Chubb, M.Sc.

L. N. Payne, Ph.D., B.V.Sc., M.R.C.V.S.

PARASITOLOGY

Mrs. M. E. Rose, Ph.D., B.Sc., M.R.C.V.S.: protozoa and other parasitic diseases in poultry

UNITED KINGDOM

PHYSIOLOGY

E. J. Butler, M.A., B.Sc., D.Phil., Ph.D., F.R.I.C., *Head*
B. M. Freeman, Ph.D., B.Sc.: energetics of hatching

VIROLOGY AND PATHOLOGY

Virus diseases; respiratory infections of the fowl
Miss J. K. A. Cook, B.Sc.
J. S. Garside, Ph.D., M.R.C.V.S., D.V.S.M. (Vict.)
J. S. McDougall, M.R.C.V.S., Dip.Bact. (Manc.)

John Innes Institute

Bayfordbury, Hertford, Herts. Tel.: Hertford 3191/2

APPLIED GENETICS

A. G. Brown: apple and pear breeding
J. R. O. Dawson, Ph.D.: tobacco mosaic in tomatoes
G. E. Marks, B.Sc.: cytology
P. Matthews, B.Sc.: cherry breeding
H. Williams, B.Sc.: strawberry breeding
B. Snoad: cytology

CELL BIOLOGY

G. G. Hussey, Ph.D.: physiology of growth in tomato
L. F. La Cour, M.B.E.: nucleic acids on chromosomes
L. McLeish, Ph.D.: isolated nuclei
A. Rodgers, Ph.D.: physical methods; ribosomes
R. G. Stickland, Ph.D.: regenerating liver
N. Sunderland, Ph.D.: culture of plant cells
J. W. Watts, D.Phil.: cytoplasmic RNA
D. H. Williamson, Ph.D.: synchronized cell cultures

GENETICS

J. R. S. Fincham, Sc.D., Ph.D., *Head of Department*: genetics and enzymology of *Neurospora*
B. J. Harrison: unstable genes in *Antirrhinum*
D. H. Morgan, Ph.D.: regulation of enzyme synthesis in *Neurospora*; analysis of suppressive mutations in *Coprinus*

National Institute of Agricultural Engineering

(The British Society for
Research in Agricultural Engineering)

Wrest Park, Silsoe, Bedford. Tel.: Silsoe 421. Cables: Ninagen, Silsoe

C. J. Moss, B.Sc., M.I.Mech.E., *Director*

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H. J. Hamblin, O.B.E., B.A., M.I.Agr.E., *Head of Division*

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P. E. Berry, A.C.G.I., M.Sc.Eng., A.M.I.Mech.E., A.F.R.Ae.S., *Head*

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D. F. Howson, B.Sc., A.M.I.Mech.E., *Head of Department*
A. G. M. Bean, M.A., A.M.I.Mech.E.: wheel research; hydraulics

Instrumentation Department

S. W. R. Cox, B.Sc., A.Inst.P., *Head of Department*

J. Matthews, B.Sc.: ergonomics

M. G. R. Warner, M.A., A.M.I.E.E.: automation

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R. D. Richardson, B.Sc.Eng., A.M.I.Mech.E., *Head of Section*

D. G. Attwood, B.Sc.Eng., A.C.T. (Birm.): metallurgy

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L. G. Morris, B.Sc.Eng., *Head of Division*

Glasshouse Department

L. G. Morris, B.Sc.Eng., *Head of Department*

J. S. Wolfe, B.A., B.Sc.: control of glasshouse environment

Growth Chamber Department

G. A. Carpenter, B.Sc., A.M.I.Chem.E., *Head of Department*

Physics Department

G. E. Bowman, B.Sc., *Head of Department*

Plant Physiology Department

J. V. Lake, B.Sc., Ph.D., *Head of Department*

D. W. Hand, B.Sc., Ph.D.: interaction of the plant and its environment

Spraying Department

J. B. Byass, M.A., *Head of Department*

H. J. Nation, B.Sc.Eng., A.M.I.Mech.E., A.M.I.Agr.E.: application of herbicides

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Farm Buildings Department

P. Hebblethwaite, M.S. (Mich.), B.Sc.Agr., N.D.A., A.M.I.Agr.E., *Head of Department*

H. R. Livingston, M.S., Ph.D., N.D.A.: livestock housing

H. J. M. Messer, B.Sc.Agr., A.R.I.C.S.: crop storage and handling

Harvesting and Handling Department

F. S. Mitchell, B.Sc.Agr., M.I.Agr.E., *Head of Department*

R. E. Arnold, M.A., *Head of Harvesting Section*

J. B. Holt, B.Sc., M.Sc.Agr.Eng., *Head of Materials Handling Section*

G. Shepperson, B.Sc., Dip.Agr., M.I.Agr.E., *Head of Conservation Section*

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Implement Testing Department

A. Phillipson, M.I.Agr.E., *Head of Department*

D. E. Patterson, M.Sc.Agr.Eng., B.Sc.Agr., *Head of Testing Technique Section*

National Institute of Agricultural Engineering, Scottish Station, see page 113

National Institute for Research in Dairying (University of Reading)

Shinfield, Reading, Berks. Tel.: Reading 883103

Prof. Sir Ronald Baskett, O.B.E., Hon. D.Sc., M.Sc., F.R.I.C., *Director*

BACTERIOLOGY

Vacant: Head of Department

Miss C. M. Cousins, B.Sc., Ph.D.: disinfection of dairy plant and equipment

J. G. Franklin, B.Sc., Ph.D.: heat-resistant micro-organisms

R. Fuller, M.Sc., Ph.D.: intestinal flora of the pig

T. F. Fryer, B.Sc.: microflora of cheese

Miss E. I. Garvie, B.Sc., Ph.D., N.D.D.: National Collection of Dairy Organisms

D. J. Jayne-Williams, M.Sc., Ph.D.: intestinal flora of the chick

F. K. Neave, B.S.A.: bovine mastitis

J. D. Oram, B.Sc., Ph.D.: nutrition of the lactic acid bacteria

L. W. Powell, B.Sc.: gut flora of the pig

B. Reiter, Ing.Agr.: starter streptococci; bacteriophage; techniques for cheese-making

Miss M. E. Sharpe, B.Sc., Ph.D.: microflora of cheese, including lactobacilli; microbiology of the bovine rumen

CHEMICAL MICROBIOLOGY

N. J. Berridge, Ph.D., D.Sc., *Head of Department*: protein and enzyme chemistry with special reference to casein, the clotting of milk, the syneresis of curd and the ripening of cheese

G. C. Cheeseman, B.Sc., Dip.Bact., Ph.D.: protein and enzyme chemistry with special reference to casein, the clotting of milk, the syneresis of curd and the ripening of cheese

L. A. Mabbitt, B.Sc., Ph.D.: protein and enzyme chemistry with special reference to casein, the clotting of milk, the syneresis of curd and the ripening of cheese

CHEMISTRY

S. J. Rowland, B.Sc., Ph.D., F.R.I.C., *Head of Department*: chemistry of milk composition and of the nutrition of the dairy cow

R. Aschaffenburg, Ph.D.: milk proteins—inheritance, structure and properties

R. L. J. Lyster, M.A., Ph.D.: milk proteins; effect of heat on milk constituents

R. H. Smith, B.Sc., Ph.D.: mineral metabolism in dairy cattle

J. E. Storry, B.Sc., Ph.D.: ruminant metabolism and the synthesis of milk constituents

J. V. Wheelock, B.Sc., B.Agr.: secretion in milk of water and the water-soluble constituents

DAIRY HUSBANDRY

A. S. Foot, M.Sc., *Head of Department*: environment in relation to milk yield and milk quality

- P. A. Clough, B.Sc.: machine milking technique, organization and performance; the mechanics and cleaning of milking machines; management of loose housing
 F. H. Dodd, B.Sc., Ph.D.: machine milking; control of bovine mastitis; monozygous twin collection
 R. G. Kingwill, B.Sc., M.S.: machine milking; bovine mastitis control
 C. Line, B.Sc.: systems of feeding dairy cattle

ENGINEERING

- H. S. Hall, O.B.E., B.Sc., *Head of Department*: dairy machinery and equipment
 R. T. Budd, B.Sc.: design of specialized equipment
 H. Burton, B.Eng., M.Sc., A.M.I.E.E.: heat treatment of milk
 J. B. Hoyle, M.A., A.M.I.E.E., A.M.I.Mech.E.: testing of dairy equipment
 S. F. Suffolk, B.Sc.: design of specialized equipment
 C. C. Thiel, B.Sc., Ph.D.: milking machines

FEEDING AND METABOLISM

- C. C. Balch, Ph.D., D.Sc., *Head of Department*: ruminant nutrition
 W. H. Broster, B.Sc., Ph.D.: nutrition of dairy stock
 J. H. B. Roy, M.A., Dip.Agr., Ph.D.: calf nutrition
 I. J. F. Stobo, B.Sc., Ph.D.: calf nutrition
 J. D. Sutton, B.A., Dip.Agr., Ph.D.: ruminant nutrition

NUTRITION

- J. W. G. Porter, M.A., Ph.D., *Head of Department*: development of digestive enzymes and utilization of nutrients in young animals
 S. Buraczewski, M.Sc., Ph.D.: amino acid blood levels and dietary protein quality
 Miss M. E. Coates, F.P.S., Ph.D.: biological assays of vitamins; antibiotics; germ-free research
 J. E. Ford, B.Sc., Ph.D.: microbiological methods for assay of B vitamins and for assessment of protein quality
 G. F. Harrison, M.P.S.: biological assays of vitamins; antibiotics; germ-free research
 W. S. Miller, M.Sc.: protein metabolism; biological assays of available amino acids
 J. H. Moore, M.Sc., Ph.D., F.R.I.C.: nutritive value of milk fat
 D. N. Salter, B.Sc., Ph.D.: protein metabolism; biochemical studies of protein digestion
 S. Y. Thompson, Ph.D., D.Sc.: digestion and metabolism of fat and fat soluble vitamins
 Miss J. Toothill, B.Sc., Ph.D., A.R.I.C.: digestion and metabolism of fat and fat soluble vitamins

PHYSICS

- G. W. Scott Blair, M.A., Ph.D., D.Sc., F.R.I.C., F.Inst.P., *Head of Department*: properties of milk curds; studies of coagulation of milk and blood; measurements of "body" of cheese
 F. A. Glover, B.Sc., A.Inst.P.: rheological and microscopic tests for motility and viability of bull sperm; counting and sizing of sperm
 J. D. S. Goulden, B.Sc., Ph.D.: studies in absorption, scattering and reflection in the ultra-violet, visible and infra-red regions of the spectrum for rapid analysis of various dairy products
 L. W. Phipps, B.Sc., Ph.D., A.R.C.S., A.Inst.P.: physical processes involved in homogenisation of milk and thermal behaviour of fats and other emulsions
 J. H. Prentice, B.Sc., A.Inst.P.: consistency of cream in relation to manufacture and storage conditions; blending properties of butters

UNITED KINGDOM

H. W. Thomas, B.Sc., Ph.D., A.Inst.P.: physical aspects of flow and coagulation of blood

PHYSIOLOGY

S. J. Folley, Ph.D., D.Sc., F.R.S., *Head of Department*: physiology of the mammary gland and reproduction

P. Andrews, B.Sc., Ph.D.: carbohydrate metabolism in the mammary gland

Miss J. D. Cleverley, B.Sc.: estimation of blood levels of neurohypophysial hormones

A. T. Cowie, Ph.D., D.Sc., M.R.C.V.S.: endocrinology of lactation and reproduction

Miss I. A. Forsyth, M.A., D.Phil.: studies on human pituitary growth hormone, prolactin

H. Gutfreund, Ph.D.: mechanisms of enzyme action

E. A. Jones, B.Sc., Ph.D.: biochemistry of the mammary gland

G. S. Knaggs, B.Sc.: neuro-endocrine control of the mammary gland

Miss E. Linford, B.Sc., Ph.D.: metabolism of boar spermatozoa

P. E. Mattner, B.Agr.Sc., M.V.Sc.: physiology of the cervix and cervical mucus

P. N. O'Donoghue, M.Sc.: histological studies and biology of prolactin

G. S. Pope, B.Sc., D.Phil., A.R.I.C.: oestrogens in the blood of cattle; plant oestrogens

G. P. Roberts, B.Sc., Ph.D.: biochemistry of cervical mucus

J. S. Tindal, B.Sc., Ph.D.: neuro-endocrine control of the mammary gland

PIG HUSBANDRY

R. Braude, Ph.D., D.Sc., Dip.Agr., Dip.An.Husb., *Head of Department*: pig nutrition and management

R. S. Barber, B.A.: pig nutrition and management

K. G. Mitchell, B.Sc., Ph.D., N.D.A.: pig nutrition

M. J. Newport, B.Sc.: pig nutrition

RADIOCHEMISTRY

R. F. Glascock, Ph.D., D.Sc., *Head of Department*: absorption, transport and metabolism of fat in ruminants; metabolism of oestrogens

C. Bishop, B.Sc.: absorption, transport and metabolism of fat in ruminants

G. D. Braithwaite, B.Sc., Ph.D.: a study of skeletal metabolism *in vivo*

R. W. Smith, B.Sc.: comparative biochemistry of mammary and other tissues; pathways of glucose and metabolism; study of tricarboxylic acid cycle

V. A. Welch, B.Sc., Ph.D.: absorption, transport and metabolism of fat in ruminants

STATISTICS

D. R. Westgarth, M.Sc., *Head of Section*: design and analysis of experiments

Miss Z. D. Hosking, B.A.: design and analysis of experiments

M. R. Jones, Dip.Tech.: design and analysis of experiments

EXPERIMENTAL DAIRY

Miss H. R. Chapman, N.D.D., *Head*: manufacture of dairy products

National Vegetable Research Station

(The British Society for the Promotion of Vegetable Research)

Wellesbourne, Warwick. Tel.: Wellesbourne 382

James Philp, B.Sc., Ph.D., *Director*

D. W. Wright, M.A., *Deputy Director*

BIOCHEMISTRY

G. G. Freeman, D.Sc., Ph.D., D.Phil., F.R.I.C., *Head of Section*: mineral nutrition; especially potassium

CHEMISTRY

D. J. Greenwood, B.Sc., Ph.D.: soil aeration

E. R. Page, B.Sc., Ph.D., A.R.I.C.: uptake of nutrients

ENTOMOLOGY

D. W. Wright, M.A., *Head of Section*: chemical control of cabbage root fly and carrot fly

T. H. Coaker, B.Sc.: biology and natural control of cabbage root fly; insect predation

J. A. Dunn, M.Sc., Ph.D.: biology and control of aphid pests of vegetables

G. A. Wheatley, B.Sc.: analysis and behaviour of insecticides in soils

IRRIGATION

E. J. Winter, M.C., M.Sc., *Head of Section*: crop water use; water conservation

D. H. Drew, B.Sc.: form and function of root systems

P. J. Salter, B.Sc., Ph.D.: availability of soil moisture; moisture release characteristics

PATHOLOGY

W. G. Keyworth, B.Sc., Ph.D., A.R.C.S., D.I.C., *Head of Section*: wilt diseases

A. G. Channon, B.Sc., Ph.D.: downy mildews

R. B. Maude, B.A., M.Sc.: seed-borne fungi

J. A. Tomlinson, B.Sc., Ph.D.: virus diseases

D. G. A. Walkey, B.Sc., Ph.D.: virus diseases

PHYSIOLOGY

J. K. A. Bleasdale, B.Sc., Ph.D., *Head of Section*: inter- and intra-specific competition; growth studies

R. B. Austin, B.Sc.: growth studies; seed production

T. H. Thomas, B.Sc., Ph.D.: plant hormones

PLANT BREEDING

J. C. Haigh, B.Sc., Ph.D., A.R.C.S., A.I.C.T.A., *Head of Section*: asparagus; tomato

B. D. Dowker, M.A., Dip.Agr.Sc., D.T.A.: onion; pea; red beet

A. G. Johnson, B.Sc., Ph.D.: Brussels sprout; cabbage; celery; watercress

STATISTICS

J. A. Nelder, M.A., *Head of Section*: growth analysis; data processing techniques

G. Berry, M.A.: plant arrangement effects

R. Mead, B.A.: mathematical models for inter-plant competition

WEEDS

H. A. Roberts, B.Sc., *Head of Section*: ecology and control of weeds

A. D. Courtney, B.Sc.Agr.: ecology and control of weeds

Plant Breeding Institute

Maris Lane, Trumpington, Cambridge. Tel.: Trumpington 3234/6

G. D. H. Bell, C.B.E., B.Sc. (Wales), Ph.D. (Cantab.), F.R.S., *Director*: cereals

J. Bingham, B.Sc. (R'dg.): winter wheat and spring oats

D. A. Bond, B.Sc., Ph.D. (Dunelm): leguminous forage crops

UNITED KINGDOM

G. K. G. Campbell, B.Sc. (St. And.), A.I.C.T.A.: sugar beet
G. J. Curtis, M.A. (Cantab.): sugar beet
J. L. Fyfe, M.Sc. (Dunelm): leguminous forage crops and grasses
K. G. Hornsey, B.Sc. (Lond.), A.R.C.S.: sugar beet
H. W. Howard, B.A., Ph.D. (Cantab.): potatoes and field brassicas
G. Jenkins, B.Sc. (Wales): oats
R. Johnson, B.Sc. (R'dg.), Ph.D. (Sask.): pathology
G. Kimber, B.Sc. (Lond.), Ph.D. (Manc.): cytogenetics
E. J. M. Kirby, B.Sc. (Dunelm), Ph.D. (Nott.): cereal crop physiology
C. N. Law, B.Sc. (Birm.): cytogenetics
F. G. H. Lupton, M.A. (Cantab.): winter wheat and oats
R. C. F. Macer, M.A., Ph.D. (Cantab.): pathology
R. Riley, D.Sc. (Sheff.), Ph.D.: cytogenetics
H. H. Rogers, B.Sc. (Lond.), Dip.Agr.Sc. (Cantab.): grasses
G. E. Russell, M.A., Dip.Agr.Sc. (Cantab.): sugar beet
G. C. M. Sage, B.A., Dip.Agr.Sc. (Cantab.): barley and spring wheat
K. F. Thompson, M.A. (Cantab.): field brassicas
R. N. H. Whitehouse, M.A. (Cantab.): barley and spring wheat
M. S. Wolfe, B.Sc. (R'dg.), Ph.D. (Cantab.): pathology

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A. Penny, B.Sc. (Aberd.)
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C. G. Johnson, D.Sc. (Lond.), *Head of Department*
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C. A. Edwards, M.Sc. (Brist.), Ph.D. (Wis.)
R. A. French, B.Sc. (Lond.)
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F. Raw, Ph.D. (Lond.)
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INSECTICIDES AND FUNGICIDES DEPARTMENT

C. Potter, D.Sc. (Lond.), D.I.C., *Head of Department*
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D. C. Griffiths, M.Sc. (Sheff.)
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R. M. Sawicki, Ph.D. (Lond.)
J. H. Stevenson, Ph.D. (Lond.), D.I.C.

NEMATOLOGY DEPARTMENT

F. G. W. Jones, M.A. (Cantab.), *Head of Department*
D. C. M. Corbett, B.Sc. (Aberd.), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.)
C. C. Doncaster, B.Sc. (Wales)
Miss Mary T. Franklin, D.Sc. (Lond.)

UNITED KINGDOM

C. D. Green, Ph.D. (Lond.), A.R.C.S.
D. N. Greet, B.Sc. (Lond.)
D. J. Hooper, M.I.Biol.
Miss Audrey M. Shepherd, Ph.D. (Lond.)
J. M. Webster, Ph.D. (Lond.), A.R.C.S., D.I.C.
A. G. Whitehead, Ph.D. (Lond.), A.R.C.S.
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T. D. Johnston, B.Sc.: brassicae crops—kale and rape, breeding and genetical studies

D. A. Lawes, M.Sc.: cereals and beans—breeding and inheritance of physiological characters

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D. I. H. Jones, Ph.D.: chemical composition of herbage with reference to varietal differences and the effect of season and management on digestibility and nutrient value

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Prof. P. T. Thomas, B.Sc., Ph.D.: cytology of grasses, clovers and cereals in relation to breeding

Hugh Thomas, Ph.D.: cytology of grasses, clovers and cereals in relation to breeding

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P. J. Goodman, Ph.D.: forage grasses—nutrient uptake

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A. Troughton, Ph.D.: root studies

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W. Ellis Davies, B.Sc.: breeding and genetical studies in forage grasses and legumes

Martin Borrill, Ph.D., F.L.S.: experimental taxonomy and species relationship in *Dactylis* and *Festuca*

Mrs. A. C. Burrows, B.Sc.: nodulation problems in *Trifolium* spp.

Ieuan Davies, M.Sc.: assessment techniques of breeders' material

M. D. Hayward, B.Sc., Ph.D.: quantitative inheritance and population studies in *Lolium*

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J. Hill, Ph.D.: population studies with special reference to competition and co-operation

E. J. Lewis, B.Sc.: intergeneric hybridization and induced polyploidy in *Lolium* and *Festuca*

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P. L. Catherall, Ph.D.: disease assessment and resistance breeding to fungus and virus diseases in grasses and cereals

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H. M. Roberts, B.Sc.: multiplication of the station bred varieties; seed storage

E. W. Bean, Ph.D.: selection for improved seed production in the herbage grasses

J. Lewis, B.Sc.: selection for improved seed production in the herbage grasses

J. L. Stoddart, Ph.D.: physiological biochemical aspects of flowering and seed maturation in herbage species

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J. W. Chowings, B.Sc.: cereals and legumes, seed sampling

R. J. Flood, B.Sc.: storage of crop seeds

UNITED KINGDOM

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Miss C. E. Quartley, B.Sc., Ph.D.: taxonomist
J. H. B. Tonkin, M.A.: grasses, roots and vegetables; seed moisture

TRIALS BRANCH

Variety trials of agricultural and field vegetable crops at Headquarters and 14 Regional Centres; varieties are assessed for yield, field characters, disease resistance and quality.

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D. T. A. Aldrich, B.Sc.Agr., Dip.Agr.: grass and legume trials
J. W. Dent, B.Sc., F.R.I.C.: chemist
D. A. Doling, B.Sc., B.Agr., Ph.D.: pathologist
J. K. Doodson, B.Sc., Ph.D.: cereal and grass viruses
W. E. H. Fiddian, M.A., Dip.Agr.: cereal trials
K. E. Haine, B.Sc.Agr.: trials of vegetable crops
Mrs. V. Silvey, B.Sc., Dip.Stat.: statistics
L. A. Willey, B.Sc.Agr.: trials of fodder and root crops

SEED PRODUCTION BRANCH

Seed certification; investigation of seed production techniques.

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S. O. S. Dark, B.Sc., Ph.D.: certification and seed production of root and vegetable seeds
C. G. Hervey-Murray, Dip.Agr.: field approval and certification of cereal seeds
J. P. Shildrick, B.A.: certification and seed production of herbage seeds

POTATO BRANCH

Trials of potato varieties; production of virus-tested seed of certain varieties; investigation of disease resistance and certain aspects of quality.

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E. Brown, B.Sc.Agr.: propagation of virus tested seed
G. R. A. Crofton, B.Sc.Agr.: seed certification
J. L. Evans, B.Sc.: stem-end blackening investigation
D. H. Long, B.A.: variety trials
D. E. Richardson, M.A.: virus specialist
P. J. W. Saunders, B.Sc., Ph.D.: fungal diseases

SYSTEMATIC BOTANY BRANCH

Identification and classification of varieties.

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J. L. Sneddon, B.Sc.Agr., N.D.A.: vegetables
T. Webster, M.Sc.Agr., N.D.A.: potatoes
A. Zaleski, M.A.: herbage

MULTIPLICATION BRANCH

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J. P. Newby, B.Sc.Agr.: officer for cereal seed multiplication
R. L. Knight, B.Sc.Agr.: officer for root and vegetable seed multiplication

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A.R.C. Unit of Statistics, *see* page 22

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T. Warwick, M.Sc.: breeding habits of frogs and toads; taxonomy and shell ornamentation in *Potamopyrgus* and related genera

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Mrs. K. M. G. Adam, B.Sc.: Hartmanellid amoebae; culture, serology, transformation
C. Rayski, Ph.D., M.R.C.V.S.: protozoa and helminths; special interest in Acanthocephala
D. S. Saunders, B.Sc., Ph.D.: diapause of maternal origin in *Mormoniella vitripennis*
P. A. G. Wilson, B.Sc., Ph.D.: parasite physiology

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*Advisory Specialist—Scottish Agricultural Advisory Service

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SOIL SCIENCE

- *K. Simpson, B.Sc., F.R.I.C., *Head*
*P. Crooks, B.Sc.: soil/plant relationships

SPECTROCHEMISTRY

- *D. Purves, B.Sc., Ph.D., F.R.I.C., *Head*: trace elements

VETERINARY

- *J. A. Watt, Ph.D., B.Sc., M.R.C.V.S., *Veterinary Investigation Officer in charge*: control of porcine enteritis, bovine and ovine hypomagnesaemia, diagnosis of Johne's disease, ovine abortion
*D. W. Deas, M.R.C.V.S., *Veterinary Investigation Officer*: bovine infertility
*W. S. Johnston, M.R.C.V.S., *Assistant Veterinary Investigation Officer*: gel diffusion precipitin tests in diagnosis
*N. S. M. MacLeod, B.V.M. & S., M.R.C.V.S., *Assistant Veterinary Investigation Officer*: histopathology of sheep pneumonia
Sub-station: Cleeve Gardens, Oakbank Road, Perth. Tel.: Perth 24362
*T. B. Nicolson, M.R.C.V.S., D.V.S.M., *Veterinary Investigation Officer*: louping-ill

UNITED KINGDOM

ZOOLOGY

- J. W. McHardy, B.Sc., *Head*: agricultural zoology
*E. Dunn, B.Sc.: plant nematodes, hatching studies and nematicides
W. J. Guild, B.Sc., Ph.D.: soil zoology
*A. R. McLellan, B.Sc.: biology and diseases of bees
*P. Osborne, B.Sc., M.S. (Calif.), Ph.D.: agricultural pests and their natural enemies

COUNTY WORK

North Region Headquarters: Cleeve Gardens, Oakbank Road, Perth. Tel.: Perth 24362

G. A. Catto, B.Sc., N.D.A., *Regional Director*

South Region Headquarters: Edinburgh School of Agriculture, West Mains Road, Edinburgh 9.

A. K. M. Meiklejohn, B.Sc., *Regional Director*

ROYAL (DICK) SCHOOL OF VETERINARY STUDIES

(University of Edinburgh)

Summerhall, Edinburgh, 9. Tel.: Newington 6801

- A. Robertson, C.B.E., M.A., B.Sc., Ph.D., M.R.C.V.S., F.R.I.C., F.R.S.E., *Dean and Professor of Animal Health*: metabolic diseases of ruminants
G. F. Boddie, B.Sc., M.R.C.V.S., F.R.S.E., *Professor of Veterinary Medicine*: cardio-vascular diseases
A. Buxton, Ph.D., F.R.C.V.S., *Professor of Veterinary Pathology*: immuno-pathology of enteric infection
A. Iggo, B.Sc., M.Agr.Sc., D.Sc., Ph.D., F.R.S.E., *Professor of Veterinary Physiology*: physiology of the nervous system
J. S. A. Spreull, Ph.D., M.R.C.V.S., *Professor of Veterinary Surgery*: urinary lithiasis; operative surgery
F. Alexander, Ph.D., D.Sc., M.R.C.V.S.: pharmacological studies of the gastro-intestinal tract
I. S. Beattie, B.Sc., M.R.C.V.S.: pneumonia in pigs
F. J. Elliott, M.Sc., Ph.D., F.R.I.C., F.R.S.E.: cardio-vascular studies
G. S. Ferguson, B.Sc., M.R.C.V.S., D.V.S.M.: bovine brucellosis and mastitis
G. Fraser, B.Sc., Ph.D., M.R.C.V.S.: animal viruses and tissue culture techniques
P. Imlah, Ph.D., M.Sc., M.R.C.V.S.: blood grouping
W. H. R. Lumsden, D.Sc., M.B., Ch.B., D.T.M., D.T.H.: trypanosomiasis
E. A. McPherson, M.Sc., M.R.C.V.S.: dermatomycosis in animals
W. N. M. Ramsay, B.Sc., Ph.D.: iron metabolism
J. A. Taylor, F.R.C.V.S.: vascularization of viscera
J. C. Wilson, B.Sc., M.R.C.V.S.: infertility in domestic animals

UNIVERSITY OF GLASGOW

Glasgow, W.2. Tel.: Western 8855

AGRICULTURE

see also West of Scotland Agricultural College, page 108

AGRICULTURAL ECONOMICS

George F. B. Houston, M.A. (Edin.), B.Litt. (Oxon.): economics of marketing; agriculture policy and agricultural history

*Advisory Specialists—Scottish Agricultural Advisory Service

BOTANY

- P. W. Brian, Sc.D. (Cantab.), F.R.S., F.R.S.E., *Regius Professor of Botany*: host-parasite relations in plant disease; plant growth regulation
- G. Bond, Ph.D., D.Sc. (Glas.), *Titular Professor of Botany*: symbiotic nitrogen-fixation
- A. M. M. Berrie, B.Sc., Ph.D. (Glas.): control of growth and development in plants; seed dormancy
- C. G. Elliott, B.Sc., M.Sc. (Tas.), Ph.D. (Cantab.): genetical studies of plant pathogens; steroid metabolism in fungi
- S. A. Hutchinson, B.Sc., Ph.D. (Brist.): effects of fungal metabolites on growth of plants
- G. D. Scott, B.Sc., Ph.D. (Glas.): physiology and ecology of lichens

GENETICS

- G. Pontecorvo, Dr.Agr. (Pisa), Ph.D. (Edin.), F.R.S., *Professor of Genetics*: parasexuality in fungi; genetic analysis via mitotic segregation in man
- D. A. Hopwood, M.A., Ph.D. (Cantab.): genetics of actinomycetes

ZOOLOGY

- D. R. Newth, B.Sc., Ph.D., *Professor of Zoology*
- D. G. Cochrane, B.Sc., Ph.D. (Glas.): neuromuscular relationships in insects
- A. F. G. Dixon, B.Sc. (Lond.), D.Phil. (Oxon.): behaviour of aphidophagous insects and their prey
- R. M. Dobson, M.A. (Cantab.), Ph.D. (Lond.): studies of British crane flies (Diptera: Tipulidae); taxonomy of *Carpophilus spp.* (Coleoptera)
- A. R. Hill, B.Sc., Ph.D. (St. And.): investigations into the bionomics and ecology of British members of the genus *Anthocoris* (Hem.: Anthocoridae); biology and systematics of Aphididae (Hemiptera: Aphididae)

Faculty of Medicine Veterinary School

Veterinary Hospital, Bearsden Road, Bearsden, Glasgow. Tel.: Bearsden 2301

Sir William L. Weipers, B.Sc., F.R.C.V.S., D.V.S.M., F.R.S.E., *Director of Veterinary Education and Professor of Veterinary Surgery*

ANIMAL HUSBANDRY AND PREVENTIVE VETERINARY MEDICINE

The relationship of lead, calcium and zinc to copper metabolism in ruminants; relationship of nutrition, pasture management and various supplements to hypomagnesaemia in sheep; ketosis in ruminants and laboratory animals; relationship of Johne's disease vaccination to the efficiency of the tuberculin test in cattle; production of minimal disease pigs; studies on the relationship of environment to growth rates in piglings.

- J. S. S. Inglis, B.Sc., M.R.C.V.S., F.R.S.E., *Professor of Animal Husbandry and Preventive Veterinary Medicine*
- A. J. D. Campbell, B.Sc., B.V.Sc., M.R.C.V.S., N.D.A., F.S.A.
- R. G. Hemingway, M.Sc., Ph.D.
- P. J. Pearce, M.Sc.
- N. S. Ritchie, B.Sc.
- Lady M. Weipers, M.A., M.R.C.V.S.

EXPERIMENTAL VETERINARY MEDICINE

- W. F. H. Jarrett, Ph.D., M.R.C.V.S., M.C.Path., F.R.S.E., *Professor of Experimental Veterinary Medicine*: pathology and immunology of parasitic disease; leukaemia and other tumours in animals
- J. Armour, M.R.C.V.S.: pathology and immunology of parasitic disease
- Mrs. L. J. Anderson, Ph.D., B.V.M.S., M.R.C.V.S.: leukaemia and other tumours in animals
- O. Jarrett, B.V.M.S., M.R.C.V.S.: leukaemia and other tumours in animals

UNITED KINGDOM

- Miss H. M. Laird, M.A.: leukaemia and other tumours in animals
M. Murray, B.V.M.S., M.R.C.V.S.: pathology and immunology of parasitic disease
G. M. Urquhart, Ph.D., M.R.C.V.S.: pathology and immunology of parasitic disease

VETERINARY ANATOMY

- J. S. Boyd, B.V.M.S., M.R.C.V.S.: development of the hip joint; studies on the developing and adult urethral of some domestic artiodactyls; intestinal arteries with special reference to the ileo-caeco-colic region in the dog
Mrs. F. E. F. Lindsay, M.R.C.V.S.: ossification in limb bones of the prenatal and postnatal calf; studies on the developing and adult urethral of some domestic artiodactyls; foetal and neonatal lungs of some domestic animals
F. J. MacCallum, M.R.C.V.S.: collateral circulatory pathways; blood vessels of the bovine foot; anatomical aspects of bovine lameness
Mrs. H. J. Smith, M.R.C.V.S.: ossification of limb bones of the prenatal and postnatal calf

VETERINARY BIOCHEMISTRY

Radio-isotopic studies on domestic animals with particular reference to fluid volume measurements; biochemical studies on parasitic helminths; immunological studies on domestic animals; study of biochemical aspects of induction of antibody synthesis.

- I. D. Aitken, Ph.D., B.V.M.S., M.R.C.V.S.
T. A. Douglas, B.Sc., Ph.D., M.R.C.V.S.
F. W. Jennings, B.Sc., Ph.D., M.Agr.
G. E. Moffat, B.Sc.

VETERINARY HISTOLOGY AND EMBRYOLOGY

Electron microscopy of the respiratory, reproductive and digestive tract of the domestic fowl; male accessory generative organs; rabbit placenta.

- R. N. C. Aitken, M.R.C.V.S.
Mrs. E. Aughey, B.V.M.S., M.R.C.V.S.

VETERINARY MEDICINE

- W. I. M. McIntyre, Ph.D., M.R.C.V.S., *Professor of Veterinary Medicine*: diseases of cattle; helminth immunity
W. A. Greig, Ph.D., B.Sc., M.R.C.V.S., *Deputy Head of Department*: metabolic diseases of cattle and sheep
G. W. Crighton, M.R.C.V.S.: lymphosarcoma and leukaemia
E. W. Fisher, Ph.D., B.Sc., M.R.C.V.S.: cardiovascular diseases of domestic animals; calf diarrhoea
I. M. Lauder, M.R.C.V.S.: bovine teat infections; dermatology
A. D. McEwan, B.V.M.S., M.R.C.V.S.: calf diarrhoea and other diseases of calves

VETERINARY PATHOLOGY, PARASITOLOGY AND MICROBIOLOGY

- J. W. Emslie, B.Sc. (Aberd.), M.R.C.V.S., *Professor of Veterinary Pathology*
R. S. F. Campbell, Ph.D. (Glas.), M.R.C.V.S., M.C.Path.: histological, histochemical and metabolic studies on arteries of the pig; factors influencing lipid uptake in tissue-culture; pathogenesis of canine virus infections
H. J. C. Cornwell, B.V.M.S. (Glas.): studies on canine viruses by the techniques of tissue-culture; pathogenesis of virus infections in domesticated carnivores; studies on avian viruses with special reference to classification
Miss Christine O. Dawson, Ph.D. (Glas.), B.Sc. (Glas.): studies on an antibiotic from *Aspergillus candidus*

- A. M. Dunn, Ph.D. (Edin.), M.R.C.V.S.: epidemiology of helminth parasitism in British mammals; study of *Delafondia vulgaris* infections in Equidae
- M. Grindlay, M.R.C.V.S., Dip.Bact. (Manc.): studies on *Escherichia coli* in animals
- J. M. Hamilton, D.V.M. (Glas.): pulmonary arterial hypertrophy in cats; pathogenesis of canine virus infections
- Miss J. Jean W. P. Henderson, B.Sc. (Glas.): biochemical studies pertaining to the pathogenesis of canine virus infections
- H. B. McCusker, M.R.C.V.S.: diseases of the skin in domestic animals; immune responses in the cat; pathogenesis of canine virus infections
- S. W. Michna, Ph.D. (Glas.), V.S. (Lwow), M.R.C.V.S.: survey of the incidence of *Brucella* micro-organisms in bovine milk destined for human consumption; leptospirosis in domestic animals; survey of the incidence of leptospirosis and salmonellosis in wild rats in the city of Glasgow and environs; value of the complement-fixation test in the diagnosis of Johne's disease
- J. G. O'Sullivan, Ph.D. (Glas.), M.R.C.V.S.: dermatomycosis
- R. J. Roberts, B.V.M.S. (Glas.): studies on *Corynebacterium pyogenes* with special reference to classification
- Miss Margaret E. Tod, B.Sc. (Edin.), M.Sc. (Edin.): role of invertebrates in parasitism
- N. G. Wright, B.V.M.S. (Glas.): pathology of experimental infectious canine hepatitis in the dog and guinea-pig

VETERINARY PHARMACOLOGY

- J. Sanford, B.V.Sc., Ph.D., M.R.C.V.S.: study of the significance of histamine in ruminants and mechanisms of anaphylaxis
- Miss F. Macleod Carey, B.Sc.: actions, metabolism and excretion of tranquillizers in the horse
- A. T. M. Hill, B.V.M.S., M.R.C.V.S.: action of stimulants of the central nervous system in the dog

VETERINARY PHYSIOLOGY

- W. Mulligan, M.Sc., Ph.D., *Professor of Veterinary Physiology*: the physiology of the host helminth relationship in domestic animals with particular reference to the immune response of the host and the physiological consequences to the host of gastro-intestinal parasites; the application of radiation and radioactive isotopes to the above problems
- G. J. Halliday, B.V.M.S., M.R.C.V.S.: alterations to function in domestic animals resulting from infections with gastro-intestinal parasites
- K. F. Hosie, B.Sc., Ph.D., M.R.C.V.S.: cardio-vascular and environmental physiology
- A. F. Munro, B.Sc., Ph.D., M.R.C.S., L.R.C.P.: respiratory metabolism of normal and atheromatous vascular tissue; intestinal absorption *in vitro* of sugars and fatty acids

VETERINARY REPRODUCTION

- A. N. Bruere, B.V.Sc., M.R.C.V.S.: chromosome studies in the sheep
- P. G. Hignett, M.R.C.V.S.: induction and synchronization of oestrus in sheep
- L. K. Nagy, B.Sc., Ph.D.: investigations into immunological relationship of *Br. abortus* in cattle and sheep
- J. Renton, M.R.C.V.S.: placental iron transfer in the rabbit

VETERINARY SURGERY

- Sir William L. Weipers, B.Sc., F.R.C.V.S., D.V.S.M., F.R.S.E., *Director of Veterinary Education and Professor of Veterinary Surgery*: intestinal obstruction in dogs

UNITED KINGDOM

J. R. Campbell, Ph.D., B.V.M.S., M.R.C.V.S.: bone disease of dogs; anaesthesia
W. R. Cook, M.R.C.V.S.: surgery of ear, nose and throat of animals
J. B. Glen, B.V.M.S.: salivary cysts; anaesthesia
J. B. Holroyd, B.V.M.S., M.R.C.V.S.: pancreatic disease in the dog
D. D. Lawson, M.R.C.V.S.: radiology; neurology and ophthalmology
A. D. Weaver, Dr.Med.Vet., M.R.C.V.S., B.Sc.: urolithiasis
R. S. Wyburn, B.V.M.S., M.R.C.V.S.: radiology, especially related to thoracic disease

NORTH OF SCOTLAND COLLEGE OF AGRICULTURE

41½ Union Street, Aberdeen. Tel.: Aberdeen 27205

(This College and the Department of Agriculture, University of Aberdeen, *see* page 98, together constitute the School of Agriculture, Aberdeen.)

John R. Raeburn, B.Sc.Agr., M.S., Ph.D., M.A., F.R.S.E., *Principal*

AGRICULTURAL BOTANY

A. D. McKelvie, B.Sc., Dip.Agr.Sc., D.T.A., *Head*
E. B. Scragg, B.Sc.Agr.: weed control

ANIMAL HUSBANDRY

T. L. Dodsworth, B.Sc.Agr., Ph.D., *Head*: meat production
C. Ball, B.Sc.Agr.: progeny testing
P. J. Broadbent, B.Sc.Agr., Ph.D.: meat production

BACTERIOLOGY

D. A. McKenzie, B.Sc.Agr., N.D.A., N.D.D., *Head*: dairy bacteriology
A. C. Hunter, B.Sc.Agr.: dairy bacteriology
K. Robinson, B.Sc.: heat resistant bacteria

CHEMISTRY

T. B. Miller, B.Sc., Ph.D., *Head*: animal nutrition
A. L. Gelman, B.Sc.Hons., Dip.Agr.Sc.: cereal and fermentation chemistry
J. K. Thompson, B.Sc., B.Agr., M.S.: plant chemistry
H. F. Walker, B.Sc.Agr., Ph.D.: animal nutrition

CROP HUSBANDRY

R. Bain, B.Sc.Agr., *Head*: crop agronomy and physiology
G. A. Blackett, B.Sc., M.Sc.
D. Morrison, B.Sc.Agr., Dip.Agr. (Cantab.), M.S.

ECONOMICS

A. M. Morgan Rees, B.Sc., M.Sc., *Head*
J. Clark, B.Sc.Agr., N.D.A.: pigs and barley beef
M. H. D. F. Fyfe, B.Sc.Agr., M.Sc., Dip.Agr. (Cantab.), D.T.A.: beef investigations
A. Grant, B.Sc.Agr., B.Sc.Econ.Hons., Dip.Agr.Econ., A.C.W.A.: accounting
G. G. Hayes, B.Sc.Econ., N.D.A.: farm organization
R. B. Reid, B.Sc.Agr., N.D.A.: farm capital
A. B. K. Tracey, B.Sc.Agr., N.D.A.: farm business management

ENGINEERING

G. Murray, B.Sc.Agr., N.D.A., N.D.D., M.I.B.A.E., *Head*: agricultural engineering
A. W. Philip, B.Sc.Agr., M.S.: machinery

ENTOMOLOGY

- G. F. Burnett, B.Sc.Hons., D.I.C., D.Sc., *Head*
 P. Blasdale, B.A.Hons.: wireworm population
 M. W. Shaw, B.Sc.Agr., M.Sc. (Leeds): aphids

FARM BUILDINGS

- D. S. Soutar, A.R.I.B.A., A.A.Hons.Dip., A.R.I.A.S., *Head*: general design
 S. H. Baxter, A.R.I.C.S.: general design
 W. A. G. Gerrie, M.C., A.R.I.C.S.: grain storage
 E. R. Harrison, Dip.Arch., A.R.I.B.A., A.I.L.A.: cattle housing
 K. L. McHattie, A.R.I.B.A.: general design

GRASSLAND

- G. J. F. Copeman, B.Sc.Agr., *Head*
 G. Swift, B.Sc.Hons., M.Sc.
 J. F. Young, B.Sc.Agr., Ph.D.

HORTICULTURE

- J. S. Panton, M.A., B.Sc.Agr., *Head*
 H. F. M. Everett, B.Sc.Hort.: fruit trials
 Miss M. O. Sanders, N.D.H.: floriculture

MYCOLOGY

- Miss E. G. Gray, B.Sc., Ph.D.Myc., *Head*: potato diseases
 R. D. Watson, B.Sc.Agr.Bot., S.D.H., D.I.C.: fungi on roots

VETERINARY HYGIENE AND PHYSIOLOGY

- D. C. MacDonald, M.R.C.V.S., M.Sc., *Head*: veterinary aspects of intensive livestock production

VETERINARY INVESTIGATION

- P. L. Shanks, B.Sc.Agr., M.R.C.V.S., *Head*: pigs
 L. G. Donald, B.Sc.Vet.Sc., M.R.C.V.S.: sheep
 W. J. Guthrie, M.R.C.V.S.: sheep
 R. M. McKenzie, M.R.C.V.S.: sheep
 G. S. Ziffo, M.R.C.V.S., B.Vet.Sc.: sheep

ZOOLOGY

- D. Robertson, D.Sc., Ph.D., B.Sc.Agr., N.D.A., *Head*: farm pests
 G. B. Mackintosh, B.Sc., M.S.: plant nematology

UNIVERSITY OF ST. ANDREWS

BOTANY

- (at Queen's College, Dundee. Tel.: Dundee 23181)
 M. J. Daft, B.Sc., Ph.D.: physiology of plant virus replication
 A. C. Hastie, B.Sc., Ph.D.: genetics of plant pathogenic fungi and host—parasite relations
 T. H. Nicholson, B.Sc., Ph.D.: general plant pathology and mycorrhiza of crop plants
 K. M. Old, B.Sc., Ph.D.: leaf stripe of oats (*Helminthosporium avenae*) and soil fungistasis

UNIVERSITY OF STRATHCLYDE

Royal College, George Street, Glasgow, C.1. Tel.: Bell 4400

APPLIED MICROBIOLOGY AND BIOLOGY

- Prof. E. O. Morris, B.Sc., Ph.D., F.I.Biol., *Head*

UNITED KINGDOM

- W. W. Fletcher, B.Sc., Ph.D., F.L.S., M.I.Biol., *Reader*: effect of pesticides on
(i) micro-organisms (including nodulation of legumes), (ii) embryonic develop-
ment using hens eggs
Miss Isobel Gardner, B.Sc., Ph.D., *Lecturer*: biochemistry and electron micro-
scopy of non-leguminous nodules
R. C. Kirkwood, B.Sc., Ph.D., *Lecturer*: uptake and movement of herbicides in
micro-organisms and higher plants
H. J. B. Lowe, B.Sc., Ph.D., *Lecturer*: distribution patterns of aphids
J. E. Smith, M.Sc., Ph.D., *Lecturer*: mode of action of herbicides (enzymological
studies); biochemical mechanisms involved in the sporulation of fungi

THE WEST OF SCOTLAND AGRICULTURAL COLLEGE

6 Blythswood Square, Glasgow, C.2. Tel.: City 5211

Higher agricultural education, research and farm advisory work.

Vacant: *Principal*

AGRICULTURAL ECONOMICS

- J. A. Gilchrist, B.Sc.Agr. (Glas.), N.D.A., N.D.D., *Head*: agricultural economics
R. W. T. Hunt, B.Com. (Liv.), M.Sc.Agr.Econ. (Nott.): farm management
J. B. McCreath, B.Sc.Agr. (Glas.), N.D.A.: economics of hill farming
C. W. Roberts, B.Sc.Agr. (Lond.), N.D.A.: agricultural economics
R. Turner, B.Sc.Agr. (Edin.), A.I.C.T.A., M.Inst.W.S.: work study

AGRICULTURAL ENGINEERING

- C. J. Swan, B.Sc.Agr. (Glas.), N.D.A., N.D.D., N.D.P., N.D.Agr.E.,
A.M.I.Agr.E., *Head*: agricultural engineering
A. Veitch, B.Sc.Mech.Eng. (Glas.), A.M.I.Agr.E.: agricultural engineering

ANIMAL HUSBANDRY

- J. Walker-Love, B.Sc.Agr. (Glas.), M.S. (Mich.), N.D.A., N.D.D., *Head*:
cattle production
I. A. Dickson, B.Sc. (Aberd.), M.Agr. (Purdue), N.D.D.: sheep production
R. Laird, B.Sc.Agr. (Glas.), M.S. (Ohio), Dip.Agr. (R'dg.), N.D.A., N.D.D.:
genetic improvement of pigs

BACTERIOLOGY

- S. Baines, B.Sc., Ph.D., *Head*: agricultural and dairy microbiology
W. F. Harrigan, B.Sc.: corynebacteria
Miss M. J. Orr, N.D.D.: dairy hygiene
E. B. Pike, B.Sc., Ph.D.: micrococci, bacterial systematics

BEE-KEEPING

- J. H. Savage, M.M., N.D.B., *Head*: bee breeding

BOTANY

- D. J. Martin, B.Sc. (Glas.), M.S. (Corn.), Ph.D. (Glas.), *Head*: hill pasture
utilization; bracken
J. W. S. Alcorn, B.Sc.Agr.Bot. (Glas.), M.Sc. (Alta.): effect of herbicides on
rhizobia
J. F. L. Charlton, B.Sc.Agr.Bot. (Dunelm): birdsfoot trefoil
J. T. Swarbrick, B.Sc.Bot. (St. And.), Dip.Agr. (Cantab.), D.T.A. (Trin.):
weed ecology
G. H. Williams, B.Sc.Agr.Bot. (Wales), Ph.D. (Leeds): bracken

CHEMISTRY

- F. E. Moon, M.Sc., Ph.D. (Dunelm), N.D.D., F.R.I.C., *Head*: animal nutrition
 R. H. Alexander, N.D.A.: *in vitro* digestibility
 A. J. McGregor, B.Sc., Ph.D. (Glas.): soil manganese
 R. C. Voss, B.Sc. (Lond.), A.R.I.C.: spectrochemistry

CROP HUSBANDRY

- H. A. Waterson, M.Sc. (Wales), *Head*: crop husbandry and weed control
 A. G. Boyd, B.Sc.Agr. (Glas.): crop trials
 R. A. Hope, B.Sc. (Leeds): crop trials

DAIRY TECHNOLOGY

- R. J. M. Crawford, B.Sc.Agr., Ph.D., N.D.A., N.D.D.: dairy products
 G. Davies, B.Sc.Agr. (R'dg.): cheese annatto
 Miss Janet H. Galloway, N.D.D.: starter cultures
 C. B. O'Connor, B.Sc. (Cork), M.Sc. (Cork): cheese quality
 A. A. E. Robinson, B.Sc. (R'dg.), N.D.D.T.: dairy products
 A. L. Wiggins, B.Sc.Agr. (Aberd.): cleansing techniques

FARM BUILDINGS

- R. J. Forsyth, D.A. (Glas.), A.R.I.B.A., F.R.I.A.S., *Head*: farm buildings

GRASSLAND HUSBANDRY

- I. V. Hunt, M.Sc. (Wales), F.L.S., M.I.Biol., *Head*: grassland productivity
 J. Frame, B.Sc.Agr. (Glas.), M.Agr.Sc. (N.Z.), Dip.Agr. (R'dg.), N.D.A., N.D.D.: grassland evaluation
 R. D. Harkess, B.Sc.Agr. (Edin.), M.S. (Corn.), Ph.D. (Nott.), N.D.A.: herbage digestibility; growth analysis

HORTICULTURE

- C. A. Wood, B.Sc., Ph.D. (Wales), M.I.Biol., *Head*: horticulture; *joint editor Horticulture Research*
 K. J. W. Beckwith, B.Sc.Hort. (Lond.): tomatoes; chrysanthemums
 I. C. G. Dougall, N.D.H.: field trials

PLANT PATHOLOGY

- J. Grainger, B.Sc. (Leeds), Ph.D. (Leeds), *Head*: plant pathology; host relations and control
 Miss M. R. M. Clark, B.Sc. (Edin.), Ph.D. (Edin.): bacterial diseases of plants

POULTRY SCIENCE

- T. E. Whittle, B.Sc., F.P.H., N.D.P., *Head*: poultry husbandry

ZOOLOGY

- D. S. MacLagan, B.Sc.Agr. (Edin.), Ph.D. (Edin.), D.Sc. (Edin.), F.R.S.E., *Head*: zoology and advisory entomology; insect epidemiology

STATE-AIDED RESEARCH INSTITUTES

Animal Diseases Research Association

Moredun Institute, Gilmerton, Edinburgh, 9. Tel.: Liberton 3262/4

J. T. Stamp, D.Sc., M.R.C.V.S., F.R.S.E., *Director*

CHEMISTRY

Biochemistry

- A. C. Field, M.V.Sc., Ph.D., M.R.C.V.S., *Head of Section*: mineral metabolism
 B. S. W. Smith, M.Sc., Ph.D., A.R.I.C.: mineral metabolism; radio-isotopes
 N. F. Suttle, B.Sc., Ph.D.: mineral metabolism

UNITED KINGDOM

Physical Chemistry

D. L. Mould, B.Sc., Ph.D., *Head of Section*: scrapie disease of sheep
J. S. Slater, B.Sc., Ph.D.: scrapie; placental function

CLINICAL INVESTIGATION

C. C. Renwick, M.R.C.V.S., D.T.V.M.: scrapie; Johne's disease; pneumonia

MICROBIOLOGY

J. G. Brotherton, F.R.C.V.S., Dip.Bact., *Deputy Director and Head of Department*: scrapie; Johne's disease; virus encephalitis of sheep (louping-ill)
A. Foggie, B.Sc., Ph.D., M.R.C.V.S.: pneumonia; tick-borne fever; virus abortion of sheep
N. J. L. Gilmour, B.V.M.S., Ph.D., M.R.C.V.S.: Johne's disease
J. M. K. Mackay, Ph.D., M.R.C.V.S.: scrapie; sheep pneumonia; jaagsiekte
J. T. Vantsis, Ph.D.: scrapie; parainfluenza III virus; virus from pig kidney

PARASITOLOGY

M. G. Christie, B.A., *Head of Department*: nematodes of sheep
M. R. Brambell, M.A., Vet.M.B., Ph.D., M.R.C.V.S.: nematodes of sheep
C. J. Mapes, B.Sc., Ph.D.: nematodes of sheep

PATHOLOGY

Neuropathology and Serology

R. M. Barlow, B.Sc., D.V.M. & S., M.R.C.V.S., *Head of Section*: Border disease; swayback in sheep
A. C. Gardiner, B.Sc.: scrapie; Johne's disease

Routine Pathology

D. I. Nisbet, B.Sc., Ph.D., M.R.C.V.S., *Head of Section*: pneumonia; jaagsiekte; diseases of bone; Johne's disease
R. G. Stevenson, D.V.M., D.V.S.M.: pneumonia of sheep and calves

PHYSIOLOGY

Prof. A. St. G. Huggett, D.Sc., Ph.D., M.B., B.S. (Lond.), F.R.S., F.R.S.E., *Head of Department*: placental function; minerals, amino acids and foetal metabolism in sheep
Miss E. J. Hervey, B.Sc., Ph.D.: placental function

The Hannah Dairy Research Institute

Ayr, Scotland. Tel.: Prestwick 77292/3

J. A. B. Smith, C.B.E., Ph.D., D.Sc., F.R.I.C., F.R.S.E., *Director*

BACTERIOLOGY

Miss M. M. Taylor, B.Sc., Ph.D., Dip.Gen.Bact.: bacteriology of milk and milk products

BIOCHEMISTRY

E. C. Owen, B.A., B.Sc., Ph.D., D.Sc., *Head*: vitamins and enzymes of milk
W. D. Annan, B.A., Ph.D.: chemistry of milk proteins
W. Manson, B.Sc., Ph.D.: chemistry of milk proteins
D. W. West, B.Sc., Ph.D., A.R.I.C.: vitamins and enzymes of milk

GRASS AND DAIRY HUSBANDRY

M. E. Castle, B.Sc.Agr., Ph.D., N.D.D., N.D.A., *Head*: dairy and grassland husbandry

UNITED KINGDOM

- A. D. Drysdale, B.Sc., M.S., Ph.D., N.D.A., S.D.D., Dip.Agr. (Cantab.):
dairy and grassland husbandry
D. Reid, B.Sc.Agr., M.S., Ph.D.: dairy and grassland husbandry
J. N. Watson, N.D.D.H.: farm management

NUTRITION

- J. H. Moore, M.Sc., Ph.D., F.R.I.C., *Head*: lipid metabolism
J. L. Clapperton, B.Sc., Ph.D.: metabolism in ruminants
J. W. Czerkawski, B.Sc., Ph.D.: metabolism in ruminants
A. K. Martin, B.Sc., Ph.D.: metabolism in ruminants
R. C. Noble, B.Sc., Ph.D.: lipid metabolism

PHYSIOLOGY

- J. D. Findlay, B.Sc., Ph.D., *Head*: environmental physiology of ruminants
W. Bianca, Dip.Ing.Agr., Dr.Sc.Tech. (Zur.): environmental physiology of ruminants
D. McE. Jenkinson, B.Sc., Ph.D.: climatic effects and the histology of bovine skin
J. A. McLean, B.Sc., Ph.D.: biophysics and direct calorimetry
D. Robertshaw, B.V.M.S., M.R.C.V.S., Ph.D.: environmental physiology of ruminants
A. J. F. Webster, M.A., Vet.M.B., M.R.C.V.S.: environmental physiology of ruminants

TECHNICAL CHEMISTRY

- R. Waite, M.Sc.Tech., Ph.D., A.R.I.C., *Head*: chemistry of grass; composition of milk; dried milk
J. Abbot, N.D.D.T.: milk analysis and dried milk
D. T. Davies, B.Sc., Ph.D.: milk analysis and protein stability in milk
J. C. D. White, B.Sc., Ph.D.: milk analysis and protein stability in milk

VETERINARY PATHOLOGY

- P. S. Blackburn, M.R.C.V.S., Ph.D., *Head*: bovine mastitis

Hill Farming Research Organization

29 Lauder Road, Edinburgh 9. Tel.: Newington 6921

- R. L. Reid, B.Sc.Agr., Ph.D., *Director*

AGRONOMIC STUDIES

- I. A. Nicholson, B.Sc.Agr., M.Sc., *Head of Department*: influence of the grazing animal on plant and soil successions
J. S. Black, B.Sc., N.D.A.: nutrient intake of grazing hill sheep
J. Eadie, B.Sc.Agr.: nutrient intake of grazing hill sheep
M. J. S. Floate, B.Sc., Ph.D.: influence of the grazing animal on plant and soil successions
J. N. Peart, B.Sc.Agr., M.Sc.: nutrition and lactation, grazing management

ANIMAL STUDIES

- J. M. Doney, B.Sc., Ph.D., *Acting Head of Department*: nutrition, climate and wool growth
W. N. M. Foster, B.A.Agr., M.A., D.Phil., B.V.M. & S., M.R.C.V.S.: tick-borne fever and tick pyaemia
R. G. Gunn, B.Sc.Agr., Ph.D.: nutrition, growth and development
J. G. Griffiths, B.A.: climate and nutrition
Miss P. Phillips, B.Sc.: seconded from A.R.C. Unit of Statistics, Aberdeen
A. J. F. Russel, B.Sc., M.Agr.Sc.: physiology of nutrition

UNITED KINGDOM

BOTANICAL STUDIES

- J. King, B.Sc.Agr., Ph.D., *Acting Head of Department*: ecology of hill pastures
Miss S. A. Grant, B.Sc., M.Sc.: climate and plant growth
J. A. Rogers, B.Sc., Ph.D.: soil moisture and plant growth
V. M. Shorrocks, B.A., D.Phil.: plant nutrition

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- A. B. Stewart, C.B.E., M.A., B.Sc., Ph.D., F.R.I.C., F.R.S.E., *Director*
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BIOCHEMISTRY

- J. S. D. Bacon, M.A., Sc.D., Ph.D., F.R.S.E., *Head of Department*
M. V. Cheshire, B.Sc., Ph.D.: transformations of carbohydrates in soils
R. I. Morrison, B.Sc., Ph.D., F.R.I.C.: humic acids, soil lipids, waxes
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MICROBIOLOGY

- D. M. Webley, M.Sc., Ph.D., *Head of Department*
J. F. Darbyshire, M.Sc., Ph.D.: ecology of soil protozoa
M. P. Greaves, B.Sc.: metabolism of organic phosphates by micro-organisms
D. Jones, M.Sc., Ph.D.: degradation of lignins and related substances by fungi

PEDOLOGY

- R. C. Mackenzie, D.Sc., Ph.D., F.R.I.C., F.R.S.E., *Head of Department*

Chemistry and Mineralogy

- J. F. Clapperton, B.Sc.: thermal characterization of organic materials
H. G. M. Hardie, B.E.M., Ph.D., A.R.I.C.: analysis of soils
W. J. McHardy, B.Sc., Ph.D.: electron microscopy
B. D. Mitchell, B.Sc., A.R.I.C.: thermal and physical characteristics of minerals and organic matter
W. A. Mitchell, B.Sc.: X-ray diffraction and optical mineralogy
M. J. Wilson, B.Sc., Ph.D.: weathering of minerals

Peat and Forest Soils

- R. Boggie, B.Sc., Ph.D.: peat ecology
S. E. Durno, B.Sc.: pollen analysis
P. C. Jowsey, B.Sc.: peat survey
H. G. Miller, B.Sc.For.: tree nutrition
R. A. Robertson, B.Sc.: peat classification and hydrology

PLANT PHYSIOLOGY

- P. C. DeKock, M.Sc., D.Phil., *Head of Department*
A. Hall: analytical techniques and plant analysis
A. H. Knight, B.Sc., A.R.I.C.: radio tracer techniques
I. R. MacDonald, B.Sc., Ph.D.: ion absorption by plant storage tissue
A. E. S. Macklon, B.Sc., Ph.D.: electrical potential measurements on plants

SOIL FERTILITY

- E. G. Williams, B.Sc., Ph.D., *Head of Department*
G. Anderson, B.Sc., Ph.D.: organic phosphorus and nitrogen in soil
W. M. Crooke, B.Sc., Ph.D., A.R.I.C.: mineral nutrition of plants
J. W. S. Reith, B.Sc.Agr., Ph.D., A.R.I.C.: manurial requirements of soils and crops
N. M. Scott, A.R.I.C.: analytical techniques and sulphur in soils

SOIL SURVEY

Systematic survey of soils of Scotland

R. Glentworth, B.S.A. (Manit.), Ph.D., *Head of Department*

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B. M. Shipley, B.Sc.

J. H. Stevens, B.Sc.

A. D. Walker, B.Sc.

SPECTROCHEMISTRY

R. L. Mitchell, B.Sc., Ph.D., F.R.I.C., F.R.S.E., *Head of Department*

M. L. Berrow, B.Sc., Ph.D.: trace elements in soils

J. C. BurrIDGE, B.A., B.Sc.: trace elements in plants

V. C. Farmer, B.Sc., Ph.D., F.R.I.C.: infra-red investigation of soil constituents

J. D. Russell, B.Sc.: infra-red investigation of clay minerals

R. O. Scott, B.Sc., Ph.D., A.R.C.S.T., A.R.I.C.: development of analytical methods

A. M. Ure, B.Sc., Ph.D.: application of direct-reading techniques

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R. H. E. Inkson, B.Sc., F.S.S., *Officer-in-Charge*

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C. A. Carlow, B.Sc., A.M.I.Agr.E.

A. J. Hamilton, N.D.A., A.M.I.Agr.E.

P. S. Hutchison, C.D.A.

D. MacIntyre, N.D.A., N.D.Agr.Eng., A.M.I.Agr.E.

B. D. Soane, B.Sc., M.S.

ENGINEERING

G. Gilfillan, B.Sc., M.Sc., A.R.C.S.T., A.M.I.Mech.E., *Head*: crop drying and storage; root crop harvesting; automatic control of field machines; hillside cultivations

R. G. Clark, B.Sc., M.Sc.Agr.Eng., A.M.I.Mech.E.

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J. B. Milner, A.M.I.Mech.E.
A. B. Moore
J. Palmer, B.Sc., M.A. (Cantab.), M.Sc.Agr.Eng.
A. M. Ramsay, A.M.I.Mech.E., A.M.I.Agr.E.

The Rowett Research Institute

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E. Cresswell, B.Sc., M.S.A., Ph.D.: sheep husbandry
F. W. H. Elsley, B.Sc.Agr., Dip.Agr. (Cantab.), Ph.D.: sow nutrition
M. F. Fuller, M.A., Ph.D.: pig nutrition with reference to environment
A. S. Jones, B.Sc.Agr., Ph.D.: pig nutrition with particular reference to bone development and protein nutrition
M. Kay, B.Sc.Agr., Ph.D., A.R.I.C.: roughage-concentrate ratios for intensive beef cattle and lactating dairy cows
D. M. S. Livingston, B.Sc.Agr., Ph.D.: pig nutrition
T. Walker, B.Sc.: non-protein nitrogen utilization by intensive beef cattle

BIOMETRY

A. W. Boyne, B.Sc., *Head*: statistical design and interpretation of experiments bearing on animal nutrition. (On editorial board of British Journal of Nutrition)
I. McDonald, M.A.: statistical design and interpretation of experiments bearing on animal nutrition. (On editorial board of British Journal of Nutrition)

DUTHIE EXPERIMENTAL FARM

H. Denerley, B.Sc.Agr., *Head*: farm management and animal husbandry
J. C. Gill, B.Sc.Agr.: sheep husbandry and nutrition

ENZYMOLGY

G. A. Levvy, Ph.D., D.Sc., F.R.I.C., *Head*: hydrolytic enzymes and the animal cell
J. Conchie, B.Sc., Ph.D.: mammalian glycosidases; their substrates and inhibitors
Miss S. Snaith, B.Sc.: glycopeptides and their degradation
T. M. Wood, B.Sc., Ph.D.: cellulolytic enzymes

LIPID BIOCHEMISTRY

G. A. Garton, B.Sc., Ph.D., D.Sc., *Head*: lipid digestion and absorption; composition and biosynthesis of tissue lipids
A. K. Lough, A.H.-W.C., Ph.D., A.R.I.C.: lipid digestion and absorption; metabolism of branched-chain fatty acids
Miss A. M. Lennox, B.Sc.: lipid digestion and absorption

MICROBIOLOGY

P. N. Hobson, B.Sc., Ph.D., F.R.I.C., F.R.S.E., *Head*: metabolism of rumen bacteria in continuous culture
T. H. Blackburn, B.A., M.Sc., Ph.D., A.R.I.C.: nitrogen metabolism by rumen bacteria
J. K. Chesters, B.A., Ph.D.: metabolism and culture of rumen protozoa
Miss J. M. Eadie, B.Sc., Ph.D.: ecological studies on rumen protozoa
C. Henderson, B.Sc.: lipolysis and hydrogenation in the rumen
S. O. Mann, F.I.M.L.T.: survival of anaerobic rumen bacteria under adverse conditions

NUTRITIONAL BIOCHEMISTRY

- C. F. Mills, B.Sc., M.Sc., Ph.D., F.R.I.C., *Head*: trace element function and requirement in animals
 Miss M. I. Chalmers, B.Sc., Ph.D.: nitrogen metabolism in ruminants
 J. Davidson, B.Sc., Ph.D., F.R.I.C.: analytical chemistry and energy metabolism
 J. F. D. Greenhalgh, M.A., M.Sc., Ph.D.: pasture utilization
 A. D. Hughes, A.R.I.C.: biochemistry of herbage
 V. C. Mason, B.Sc., Lic.Agr.: nitrogen metabolism in ruminants
 J. Quarterman, B.Sc., Ph.D., A.R.I.C.: intermediary metabolism in trace element deficiency

PATHOLOGY (including Helminthology)

- J. J. Bullen, Ph.D., M.R.C.V.S., *Head*: bacterial infections of animals
 B. F. Fell, Ph.D., B.Sc.Vet.Sc., M.R.C.V.S.: pathology of the intestine
 F. White, Ph.D., B.Sc., M.R.C.V.S., B.Sc.Vet.Sc.: bovine mastitis
 H. J. Rogers, Ph.D., B.Sc.: chemistry of immune reactions
 G. C. Hunter, B.Sc.: immunity to helminths
 G. H. Cushnie, F.I.M.L.T.: bacterial infections of animals
 Miss R. Campbell, B.Sc.: nutrition and metabolism

PHYSIOLOGY

- R. N. B. Kay, M.A., Ph.D., *Head*: physiology of digestion in ruminants
 D. Benzie, M.B.I.R.: radiographic studies on the skeleton and dentition and on the vascular, lymphatic and digestive systems of domestic animals
 K. L. Blaxter, Ph.D., D.Sc., F.R.S.E., *Director*: closed circuit respiration calorimetry of ruminants and pigs
 J. M. Brockway, B.Sc., Ph.D.: the design of gradient layer calorimeters; the heat output by sheep and pigs in relation to feeding, age and the temperature of the environment
 A. D. Care, M.A., Ph.D., B.V.M.S., M.R.C.V.S.: magnesium and calcium homeostasis; parathyroid hormone and thyrocalcitonin
 J. G. Gordon, B.Sc.Agr., Ph.D.: animal behaviour; the factors influencing rumination
 Miss F. Hinde, B.A.: the study of thyroid and parathyroid hormone affecting calcium and magnesium homeostasis
 J. D. Pullar, B.Sc., Ph.D.: the design of gradient layer calorimeters; the heat output by sheep and pigs in relation to feeding, age and the temperature of the environment
 D. Scott, B.Sc., Ph.D.: absorption and excretion of minerals by ruminants
 J. H. Topps, B.Sc., Ph.D., A.R.I.C.: digestion of high-concentrate diets by ruminants
 F. G. Whitelaw, B.Sc.Agr., Ph.D.: production and absorption of short-chain fatty acids in the rumen; metabolic effects of high-concentrate diets

PROTEIN CHEMISTRY

- R. L. M. Synge, B.A., Ph.D., F.R.I.C., F.R.S., F.R.S.E., *Head, Deputy Director*: protein and non-protein forms of bound amino acid residues in plant material, and their metabolism; physico-chemical separations
 R. Dawson, M.Sc., Ph.D.: feed technology, particularly protein quality
 Miss G. M. Ellinger, B.Sc., Ph.D., A.R.I.C.: amino acids
 E. I. McDougall, B.Sc., Ph.D., A.R.I.C.: proteins and immune bodies of physiological fluids; physico-chemical separations; responsible for physical services of Institute
 N. A. Matheson, B.Sc., Ph.D.: amino acids and nitrogenous constituents of leaves

UNITED KINGDOM

- A. J. Pusztai, M.Sc., Ph.D.: proteins and glycoproteins of plants; properties of large molecules in non-aqueous solvents
A. A. Woodham, B.Sc., Ph.D., F.R.I.C.: feed technology, particularly protein quality

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Scottish Horticultural Research Institute

Invergowrie, Dundee. Tel.: Invergowrie 441

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A. R. Wilson, B.Sc., M.S., Ph.D., *Deputy Director*

CROPS RESEARCH

- P. D. Waister, B.Sc., Ph.D., *Head of Section*: effects of environment and management techniques on crop performance
M. R. Cormack: cultural practices with fruit crops
H. Taylor, N.D.H.: cultural practices with vegetable crops

MYCOLOGY

- A. R. Wilson, B.Sc., M.S., Ph.D., *Head of Section*: pathology and storage of the potato tuber; grey mould of tomatoes
R. A. Fox, B.Sc., B.Agr.: potato gangrene
W. R. Jarvis, B.Sc., Ph.D., D.I.C.: diseases of soft fruit
Miss I. G. Montgomerie, B.Sc., Ph.D.: strawberry red-core; raspberry stamen blight
M. Perombelon, B.Sc., M.Sc.: bacterial soft rot of potatoes
D. A. Perry, B.Sc., Ph.D.: seed vigour and seedling pathology
H. M. Wilson: fluorescent tracer techniques with plant pathogens

PLANT BREEDING

- C. North, B.Sc., M.Sc., Ph.D., *Head of Section*: vegetable and ornamental crops
M. M. Anderson, N.D.H., S.D.H.: blackcurrant
H. J. V. Gledhill, B.Sc.: carrot, leek
D. L. Jennings, B.Sc., Ph.D.: raspberry, blackberry
Miss W. G. Priestley, Dip.Hort.: bean, cabbage, Brussels sprout
Miss P. B. Topham, M.A., B.Sc.: raspberry, blackberry
Miss B. M. Tulloch, S.D.H.: raspberry, blackberry
A. B. Wills, B.Sc., M.S., Ph.D.: cytogenetics

PLANT PHYSIOLOGY

- C. G. Guttridge, B.Sc., Ph.D., *Head of Section*: mechanisms controlling growth and flowering of strawberry
J. W. Dancer, B.Sc., Ph.D.: growth studies in *Brassicae*
P. B. Goodwin, B.Sc., M.Sc., Ph.D.: mechanisms controlling fruit growth
D. T. Mason, B.Sc., Ph.D.: developmental and hormone physiology of flower crops

VIROLOGY

- R. M. Lister, B.Sc., Ph.D., D.T.A., Dip.Agr.Sc., *Head of Section*: characterization, properties and relationships of viruses in horticultural crops
Mrs. S. Allen, B.Sc., Ph.D.: biochemical studies of plant viruses
J. Cathro: electron microscopy of plant viruses
J. Chambers, B.Sc.: propagation of virus-free plants
W. P. Mowat, B.Sc., Dip.Agr.Sc.: characterization, properties and relationships of viruses in horticultural crops

UNITED KINGDOM

A. F. Murant, B.Sc., Ph.D.: characterization, properties and relationships of viruses in horticultural crops

ZOOLOGY

C. E. Taylor, B.Sc., Ph.D., *Head of Section*: nematode and insect vectors of plant viruses

P. R. Thomas, B.Sc., M.Sc., Ph.D.: nematode parasites of horticultural crops

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W. Black, Ph.D., D.Sc., F.R.S.E., *Chief Assistant*

FORAGE CROPS

D. Cameron, B.Sc.: oat and barley breeding

I. H. McNaughton, M.A., D.Phil.: brassica breeding and cytogenetics

D. Ratcliffe, B.Sc., Ph.D.: ecology of hill vegetation

A. Smith, B.Sc., Ph.D.: genecology of hill grasses

POTATOES

W. Black, Ph.D., D.Sc., F.R.S.E.: potato breeding and the genetics of blight resistance

G. Cockerham, B.Sc., Ph.D.: genetics of response to blight resistance

J. M. Dunnett, B.Sc., Ph.D.: genetics of response to eelworms

D. A. Govier, B.Sc., Ph.D.: potato virus investigations

Miss J. M. Malcolmson, B.Sc., Ph.D.: storage pathology, blight

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MINISTRY OF AGRICULTURE

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J. G. Murray, M.Agr., Ph.D., *Head*: dairying; food

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J. Scholefield, B.Sc., M.Sc.: fruit and vegetable canning

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A. R. Edwards, B.Sc.: aphid vectors of virus diseases

UNITED KINGDOM

R. J. Willis, B.Sc., Ph.D.: fruit and vegetable pests
R. D. Winslow, B.Sc., B.Agr., Ph.D.: nematology

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crop husbandry
W. H. Foster, B.Sc., Dip.Agr.Sc. (Wales): poultry breeding and husbandry

Biometrics Division

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and physiology; chemistry of herbage conservation
A. M. Alston, B.Sc., Ph.D.: soil chemistry; plant nutrition
D. A. Dickson, B.Sc.: forest soils (peats) and forest tree nutrition
N. Jackson, B.Sc., B.Agr., M.A., Ph.D., A.R.I.C.: poultry nutrition; herbage
conservation
J. W. Jordan, B.Agr., A.I.C.T.A., A.R.I.C.: dairy chemistry
J. S. V. McAllister, D.F.C., D.F.M., B.Agr., Ph.D.: fertilisers
S. McConaghy, B.Sc., M.Agr., F.R.I.C.: soils
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J. Lowe, M.Agr., Ph.D., M.I.Biol.: grassland
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R. H. Stewart, B.Agr.: seed certification

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I. G. P. Dingwall, B.Sc., D.H.E., *Head*
A. A. Frost, B.Sc.Hort., *Deputy*: glasshouse crops
D. J. Allott, B.Sc., M.I.Biol., F.L.S.: soft fruit and vegetables
J. Cartwright, B.Sc., M.S.: apples and roses
R. C. Ross, B.Sc.Hort.: mushrooms

Plant Breeding Division

Loughgall, Co. Armagh. Tel.: Loughgall 206/7

E. V. B. Wilson, B.Sc., *Head*
C. A. Foster, B.Sc.: grasses
D. J. Hodges, B.Agr.: cereals
K. G. Proudfoot, M.Agr.: potatoes
C. E. Wright, B.Sc., B.Agr., Ph.D.: grasses

Plant Pathology Division

Queen's University, Belfast, 9. Tel.: Belfast 27911

- Prof. Robert McKee, M.A., Ph.D., *Head*: general pathology
 E. L. Calvert, M.Agr., M.I.Biol.: general plant virology; potato diseases
 C. Logan, B.Sc., Ph.D., M.I.Biol.: bacteriological plant pathology; potato black leg
 C. W. R. McCreary, M.Sc., A.I.C.T.A., M.I.Biol.: potato diseases; techniques for testing varietal susceptibility
 J. P. Malone, B.Sc., Ph.D., M.I.Biol.: cereal diseases; techniques for seed health examination; diseases of grasses
 D. Seaby, B.Sc., B.Agr.: forest pathology
 T. R. Swinburne, B.Sc., A.R.C.S., D.I.C., Ph.D., M.I.Biol.: fruit diseases; apple scab; apple fruit rots; epidemiology of smut fungi
 J. C. Taylor, B.Sc., B.Agr.: diseases of horticultural crops (roses and chrysanthemums); forest tree pathology

Veterinary Research Division

Stormont, Belfast, 4. Tel.: Belfast 63038. Cables: Laboratory, Belfast

- Prof. H. G. Lamont, C.B.E., Sc.D., D.Sc., M.R.C.V.S., *Chief Scientific Officer, Head*
 W. R. Kerr, I.S.O., Ph.D., B.Sc., F.R.C.V.S., D.V.S.M., *Deputy*: immunology and brucellosis
 C. Dow, Ph.D., B.V.M.S., M.R.C.V.S.: neuropathology
 W. A. M. Gordon, Ph.D., B.Agr., M.R.C.V.S.: poultry diseases
 G. H. K. Lawson, Ph.D., B.Sc., B.V.M.S., M.R.C.V.S.: enteritis in pigs
 J. K. L. Pearson, Ph.D., B.Sc., M.R.C.V.S.: mastitis
 J. G. Ross, D.V.S.M., F.R.C.V.S., Dip.An.Gen.: liver fluke in sheep
 J. R. Todd, Ph.D., M.Agr., B.Sc., Dip.Agr.Sc., A.R.I.C.: copper and magnesium studies

Agricultural Research Institute of Northern Ireland

Hillsborough, County Down. Tel.: Hillsborough 484

- Prof. J. C. Murdoch, B.Sc., Ph.D., *Director*
 T. J. Forbes, B.Agr., Ph.D., Dip.Agr.: cattle and sheep husbandry
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 N. Walker, B.Sc.: pig husbandry

QUEEN'S UNIVERSITY OF BELFAST

Belfast 7. Tel.: Belfast 30111

AGRICULTURE

See Ministry of Agriculture, page 117

BOTANY

- D. J. Carr, M.Sc., Ph.D., *Professor*: experimental morphology and anatomy; water relations, photoperiodism, carbon nutrition, and transport of assimilates in angiosperms; Australian bryophytes and taxonomy of *Eucalyptus*
 Mrs. S. G. M. Carr, B.Sc.: ecology, especially in relation to grazing on alpine catchments; morphology and taxonomy of *Eucalyptus* and other Australian genera
 R. N. Govier, B.Sc.: biology of angiosperm hemiparasites
 B. E. S. Gunning, M.Sc., Ph.D., *Reader*: ultrastructure and biochemistry of plastids

UNITED KINGDOM

M. G. R. Hart, B.Sc., Ph.D.: bacterial genetics

I. Mukherjee, M.Sc., Ph.D.: physiology and biochemistry of flowering plants

D. Park, M.Sc., Ph.D., *Reader*: fungal morphogenesis; ageing in fungi

R. E. Parker, B.Sc., *Senior Lecturer*: moorland and bog ecology

J. S. Pate, M.Sc., Ph.D., *Reader*: physiology of the symbiosis between host and root-nodule bacteria; nitrogen nutrition of higher plants

P. M. Robinson, B.Sc., Ph.D.: fungal physiology and morphogenesis; plant growth substances

A. G. Smith, B.Sc., Ph.D., *Reader*; palynology and C^{14} dating of recent deposits and archaeological sites

D. L. Smith, B.Sc., Ph.D.: experimental morphogenesis of *Carex* inflorescences

ZOOLOGY

E. M. Pantelouris, B.Sc., Ph.D., Dip.An.Gen., *Senior Lecturer*: biochemical genetics; liver fluke metabolism

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BIOCHEMISTRY

D. T. Elmore, B.Sc., Ph.D., A.R.C.S., *Senior Lecturer*: proteolytic enzymes

I. Leslie, B.Sc., Ph.D., *Reader*: animal tissue culture

F. H. Malpress, B.A., Ph.D., *Reader*: milk proteins

CANADA

CANADA DEPARTMENT OF AGRICULTURE

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RESEARCH BRANCH

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T. G. Willis, B.S.A., M.Sc., *Executive Assistant*

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H. S. Thompson, B.Sc.Agr., M.A., Ph.D.: Fungicides

E. G. Anderson, B.S.A., M.S.: Herbicides

C. G. MacNay, B.A.: Insect Pest Survey

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Miss I. Creelman, B.A.: Insect Pest Survey
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G. H. Parker: Biographics

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Central Experimental Farm, Ottawa

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Mrs. P. M. Morse, M.A. (Oxon.): experimental design, bioassay
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Mrs. E. C. Pielou, B.Sc., Ph.D. (Lond.): ecology, population dynamics
H. B. Cannon, B.S.A. (McG.), Ph.D. (Lond.): experimental design, crop experiments
G. M. Weiss, B.S.A. (U.B.C.), M.S. (Mich.): quantitative genetics
A. Petrasovits, M.A. Stat. (Fla.): bioassay, subjective trials

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D. A. Shearer, B.A., M.A., Ph.D.: organic methods
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W. N. Yule, B.Sc., Ph.D.: pesticide residues, bioassay
D. S. Gamble, B.Sc., M.Sc., Ph.D.: physical chemistry

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J. G. Kemp, B.E.Agr.: plot and field equipment
K. R. Scott, B.Sc., P.Eng.: thermodynamics, environment equipment
G. E. Timbers, B.S.A., M.S.A.: food processing equipment
J. E. Turnbull, B.Sc., M.Sc.: liaison and technical information (farm buildings)
P. W. Voisey, G. I. Mech. E., P.Eng.: mechanical instrumentation
P. Wiggins, B.Sc., M.Sc.: physics instrumentation

Research Institutes

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Central Experimental Farm, Ottawa

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W. A. Jordan, B.S.A.: crop planning and beef cattle nutrition
W. R. Settle, B.Sc.: histochemistry
H. J. Teskey, B.Sc., M.S.: veterinary entomology

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F. D. Sauer, D.V.M., M.S., Ph.D., *Chief of Section*: lipid metabolism, ruminant ketosis

- J. D. Ciperá, M.S.A., Ph.D.: metabolism of connective tissue
 Miss D. S. Dow, B.A.: hormones
 J. D. Erfle, B.S.A., M.S., Ph.D.: lipid metabolism
 T. S. Foster, B.Sc., M.Sc., Ph.D.: adrenal hormones and metabolism
 G. L. Frederick, D.V.M., M.Sc.: vitamin B₁₂, iron, reproductive problems
 K. J. Jenkins, B.Sc., M.Sc., Ph.D.: selenium and vitamin E relationship to muscular dystrophy
 F. A. Vandenheuvel, B.Sc., M.Sc., Ph.D.: lipoproteins, steroids

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 K. G. Hollands, B.A., B.S.A., M.S.A.: poultry physiological genetics
 A. J. Lee, B.Sc., Ph.D.: dairy cattle genetics
 E. S. Merritt, B.Sc., M.S., Ph.D.: poultry genetics
 J. Nagai, B.Agr., D.Agr.: mouse genetics

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 J. R. Aitken, B.S.A., M.Sc., Ph.D.: protein quality (poultry)
 L. J. Fisher, B.S.A., M.Sc., Ph.D.: milk secretion and composition (dairy cattle)
 D. P. Heaney, B.S., M.S., Ph.D.: forage utilization (ruminants)
 M. Hidirolou, D.V.M., Dip. Nut.: selenium and white muscle disease (ruminants)
 W. G. Hunsaker, B.S.A., M.S.A., Ph.D.: cardiovascular and environmental physiology (poultry)
 J. R. Hunt, B.S.A., Ph.D.: physiology—egg quality (poultry)
 J. R. Lessard, B.A., B.S.A., M.S., Ph.D.: forage conservation (ruminants)
 E. E. Lister, B.Sc., M.Sc., Ph.D.: digestive physiology (ruminants)
 V. S. Logan, B.Sc., M.Sc.: milk production (on leave 1966, 1967)
 R. E. Smith, B.Sc., M.Sc., Ph.D.: amino acid requirements (poultry)

Food Research Institute

Central Experimental Farm, Ottawa

R. P. A. Sims, B.Sc., Ph.D. (McG.), F.C.I.C., *Director*

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 B. Urbas, Ph.D. (Zag.): carbohydrate chemistry

DAIRY SECTION

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 C. A. Gibson, B.S.A. (Man.), M.S.A. (Tor.): processing, starter bacteria
 V. R. Harwalkar, B.Sc., M.Sc. (Ban.), Ph.D. (Wis.): milk proteins and enzymes
 W. A. McGugan, B.S.A. (Sask.), Ph.D. (Wis.): chemistry of flavour compounds

LIPID SECTION

- R. P. A. Sims, *Head*: lipids and enzymes

CANADA

M. Lepage, B.A., B.S.A. (Laval), M.Sc., Ph.D. (Penn.): lipid chemistry
Miss Mary E. McKillican, B.Sc. (Man.), M.S. (Minn.), Ph.D. (McG.): lipid chemistry

MICROBIOLOGY SECTION

J. A. Elliott, B.S.A. (Sask.), M.S., Ph.D. (Wis.), *Head*: lactobacilli
G. B. Landerkin, B.S.A. (Tor.), M.S. (Wis.): milk and meat organisms
E. W. Seitz, B.S.A. (Sask.), M.S., Ph.D. (Ore.): metabolism
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PROCESSING SECTION

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M. M. Aref, B.Sc. (Cairo), M.Sc., Ph.D. (Ore.): processes and products
M. E. Larmond, B.Sc. (Mt. St. Vincent): taste panels
A. C. Nunes, B.Sc. (Bom.): quality evaluation

PROTEIN SECTION

J. R. Quinn, M.S., Ph.D. (Mich.), *Head*: biochemistry

STORAGE SECTION

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A. B. Durkee, B.S.A. (Acadia), M.Sc. (West.): organic chemistry
J. D. Jones, B.Sc., M.Sc., Ph.D. (Wales): plant biochemistry
W. R. Phillips, B.S.A., M.S.A. (Tor.): plant physiology
P. A. Poapst, B.Sc., B.Sc. (McG.): plant physiology

Entomology Research Institute

Central Experimental Farm, Ottawa

G. P. Holland, B.A., M.A. (Br. Col.), D.Sc. (Carl.), *Director of Institute and Chief, Taxonomy Section*: taxonomy of Siphonaptera
E. E. Lindquist, B.S., M.Sc., Ph.D. (Calif.): taxonomy of Arachnidae
E. C. Becker, B.Sc. (Mo.), M.Sc., Ph.D. (Ill.): taxonomy of Coleoptera
D. E. Bright, B.S. (Colo.), M.S. (Brig. Young), Ph.D. (Calif.): taxonomy of Coleoptera
W. J. Brown, B.A. (Kan.), M.Sc. (Okla.): taxonomy of Coleoptera
H. F. Howden, B.S., M.S. (Md.), Ph.D. (N.C.): taxonomy of Coleoptera
J. G. T. Chillcott, B.S.A. (Tor.), Ph.D. (Kan.): taxonomy of Diptera
J. F. McAlpine, B.S.A. (Tor.), M.Sc., Ph.D. (Ill.): taxonomy of Diptera
B. V. Peterson, B.S., M.S., Ph.D. (Utah): taxonomy of Diptera
G. E. Shewell, B.Sc., M.Sc. (McG.): taxonomy of Diptera
J. R. Vockeroth, B.S., M.A. (Sask.), Ph.D. (Oxon.): taxonomy of Diptera
D. M. Wood, B.A., M.A. (Tor.), Ph.D. (McG.): taxonomy of Diptera
L. A. Kelton, B.S.A. (Sask.), M.Sc., Ph.D. (Iowa): taxonomy of Hemiptera
W. R. Richards, B.Sc. (Alta.), M.Sc., Ph.D. (Ill.): taxonomy of Hemiptera
W. R. M. Mason, B.Sc. (Alta.), Ph.D. (Corn.): taxonomy of Hymenoptera
C. D. F. Miller, B.S.A. (Tor.), M.Sc. (Br. Col.): taxonomy of Hymenoptera
H. E. Milliron, B.S. (W. Va.), M.S. (Mich.), Ph.D. (Minn.): taxonomy of Hymenoptera
O. Peck, B.Sc. (Alta.), M.Sc., Ph.D. (McG.): taxonomy of Hymenoptera
Miss L. K. Smith, B.Sc. (Alta.), M.Sc., Ph.D. (Wis.): taxonomy of Hymenoptera
G. S. Walley, B.S.A. (Tor.), M.S. (Iowa): taxonomy of Hymenoptera
T. N. Freeman, B.S.A. (Tor.), M.Sc. (Col.), Ph.D. (Tor.): taxonomy of Lepidoptera
D. F. Hardwick, B.A. (Sask.), M.Sc. (McG.), Ph.D. (Calif.): taxonomy of Lepidoptera

- Miss M. R. MacKay, B.Sc., M.Sc. (Sask.): taxonomy of Lepidoptera
 A. Mutuura, B.Sc. (Taihoku), Ph.D. (Kyushu): taxonomy of Lepidoptera
 F. Schmid, Lic. es Sci. Nat., D. es Sci. Nat. (Lausanne): taxonomy of Lepidoptera
 J. A. Downes, B.Sc. (Lond.), A.R.C.S., *Chief*, Experimental Biology Section: biting fly ecology
 J. W. Arnold, B.A., M.Sc., Ph.D. (West. Ont.): insect haematology
 P. S. Corbet, B.Sc., D.Sc. (R'dg.), Ph.D. (Cantab.): biting fly ecology
 J. C. Guppy, B.S.A. (Man.), M.S. (Corn.): ecology, forage crop insects
 D. G. Harcourt, B.S.A. (Tor.), Ph.D. (Corn.): ecology, field and vegetable crop insects
 Miss B. N. A. Hudson, B.Sc., Ph.D. (Lond.): insect physiology
 W. G. Matthewman, B.S.A. (Tor.), M.Sc. (McG.): ecology, field and vegetable crop insects
 D. R. Oliver, B.A., M.A. (Sask.), Ph.D. (McG.): biting fly ecology
 D. P. Pielou, B.Sc., Ph.D. (Birm.): insect ecology
 J. G. Robertson, B.Sc. (Man.), M.A., Ph.D. (Br. Col.): insect genetics
 Miss E. H. Salkeld, B.S.A., M.S.A. (Tor.), Ph.D. (Lond.): insect histology
 A. Wilkes, B.S.A., M.Sc., Ph.D. (Tor.): insect genetics
 R. H. Mulvey, B.Sc. (McG.), M.S. (Ore.): *Chief*, Nematology Section: taxonomy and cytology of nematodes
 R. V. Anderson, B.A. (Augsburg Coll.), M.S. (Minn.), Ph.D. (Wis.): taxonomy of nematodes
 B. E. Hopper, B.S. (R.I.), M.S. (Ala.): ecology and taxonomy of nematodes
 K. C. Sanwal, B.Sc., M.Sc., Ph.D. (Luck.): morphology and taxonomy of nematodes
 Miss L.-Y. Wu, B.S., M.S. (Lingnan), Ph.D. (McG.): morphology and taxonomy of nematodes
 T. A. Gochnauer, B.A. (Lawrence), M.S., Ph.D. (Wis.), *Chief*, Apiculture Section: bee diseases
 R. Boch, Dr. rer.nat. (Munich): bee behaviour
 B. Furgala, B.S.A., M.Sc. (Man.), Ph.D. (Minn.): ecology of honey bees
 J. C. M. L'Arrivee, B.S.A., M.Sc. (Minn.), Ph.D. (Iowa): bee behaviour

Ottawa Research Station

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 R. V. Clark, B.Sc. Agr., M.Sc. (McG.), Ph.D. (Wis.): plant pathology cereal crops
 F. Gfeller, B.S.A. (Tor.), M.Sc. (McG.): genetics and breeding of wheat and field peas
 J. G. R. Loiselle, B.Sc. Agr., M.Sc. (McG.), Ph.D. (Wis.): genetics and breeding of barley
 H. Miller: wheat quality
 A. G. Plessers, B.Sc. Agr. (McG.), M.S., Ph.D. (Minn.): genetics and breeding of winter wheat
 T. Rajhathy, Ing. Agr., M.Sc., D. Agr. Sc. (Bud.): cytogenetics, species relationships in *Avena* and *Hordeum*
 D. R. Sampson, B.Sc. (Acadia), A.M., Ph.D. (Harv.): genetics, *Avena* species
 E. B. Wagenaar, Ing. Agr. (Wag.), Ph.D. (Alta.): cytogenetics

CANADA

DEVELOPMENTAL RESEARCH SECTION

- R. M. MacVicar, B.S.A., M.Sc. (McG.), *Head*: grass breeding, field crop production
L. M. Casserly, B.A. (St. Pat's), B.S.A., M.Sc. (McG.): agronomic trials of cereals and forage plants
D. R. Gibson, B.Sc. Agr. (McG.): grass breeding

FORAGE CROPS SECTION

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L. Dessureaux, B.A., B.S.A. (Laval), M.Sc., Ph.D. (Wis.): genetics and breeding of legumes
L. S. Donovan, B.S.A. (Tor.), M.S., Ph.D. (Neb.): genetics and breeding of *Zea mays* and soybeans
L. P. Folkins, B.Sc. Agr. (McG.): pasture research
Miss B. E. Murray, B.S.A., M.Sc. (Sask.), Ph.D. (Corn.): radiation genetics
R. W. Robertson, B.S.A. (Tor.): plant introduction

HORTICULTURAL CROPS SECTION

- L. H. Lyall, B.S.A. (Man.), M.S. (Minn.), *Head*: genetics and breeding of tomato and pea
A. T. Bolton, B.Sc., M.Sc., Ph.D. (West Ont.): plant pathology, horticultural crops
S. O. Fejer, Ing. Agr. (Zur.): quantitative genetics; breeding methods
J. B. Julien, B.Sc. Agr. (Laval), M.Sc. (McG.), Ph.D. (Tor.): plant pathology fruit crops
V. W. Nuttall, B.S.A. (Man.), M.S. (Corn.): genetics and breeding of cucumber, pea and eggplant
L. P. S. Spangelo, B.S.A., M.Sc. (Man.), Ph.D. (Minn.): genetics and breeding of apple, strawberry and raspberry
Miss F. Svejda, Ing. Agr., Doktor der Bodenkultur (Vienna): genetics and breeding of *Rosa*
R. Watkins, B.S.A. (U.B.C.), Ph.D. (Sask.): quantitative genetics and breeding methods, apple, strawberry and raspberry

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W. B. Towill, B.S.A. (Sask.), *Superintendent*: field crops

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P. P. Dermine, L.S.A. (Montr.), M.Sc. (McG.): field crops
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- P.O. Box 340, Trenton. Tel.: 392-8855
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W. P. Mohr, B.S.A., M.S.A. (Man.): fruit and vegetable processing

DEPARTMENT OF HORTICULTURE

Guelph University. Tel.: 824-4120 Ext. 794

G. R. Johnston, B.S.A., M.S.A. (Tor.): potato breeding

Microbiology Research Institute

Central Experimental Farm, Ottawa

- R. M. Hochster, B.Sc., Ph.D., *Acting Director*
 S. M. Lesley, B.Sc., M.A., Ph.D.: bacterial nucleic acids
 R. M. Behki, B.Sc., M.Sc., Ph.D.: bacterial enzymology
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 J. W. Rouatt, B.S.A., M.Sc., Ph.D.: rhizosphere, bacteria
 E. A. Peterson, B.Sc., M.Sc., Ph.D.: rhizosphere, fungi
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 V. N. Iyer, B.Sc., M.Sc., Ph.D.: molecular and cellular genetics
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 I. L. Stevenson, B.S.A., M.S.A., Ph.D.: bacterial physiology and nutrition
 D. C. Gillespie, B.S.A., M.S.A., Ph.D.: bacterial physiology
 C. S. Stachow, B.Sc., M.Sc., Ph.D.: enzyme regulation
 A. G. Lochhead, B.A., M.Sc., Ph.D., F.R.S.C.: bacterial nutrition

Plant Research Institute

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 C. E. Ouellet, B.A., B.Sc., M.Sc.: agrometeorology
 G. D. V. Williams, B.Sc.: agrometeorology
 V. A. Helson, B.A., M.A.: environmental physiology
 L. A. Cabana, B.A., L.Sa.: environmental physiology
 J. E. Fisher, B.S.A., M.Sc., Ph.D.: environmental physiology
 D. J. C. Friend, B.Sc., Ph.D.: environmental physiology
 F. D. H. Macdowall, B.Sc., M.Sc., Ph.D.: environmental physiology
 V. R. Wallen, B.Sc., M.Sc., Ph.D.: environmental phytopathology
 P. K. Basu, B.Sc., M.Sc., Ph.D.: environmental phytopathology
 L. Seaman, B.Sc., Ph.D.: environmental phytopathology
 R. M. D. Sutton, B.A., M.A., Ph.D.: environmental phytopathology
 D. Siminovitch, B.Sc., M.Sc., Ph.D.: frost hardiness
 J. W. Groves, B.A., M.A., Ph.D.: mycology
 Mrs. R. M. Arnold, B.A., M.Sc.: mycology
 D. J. S. Barr, B.Sc., M.Sc., Ph.D.: mycology
 M. P. Corlett, B.A., M.A., Ph.D.: mycology
 G. D. Darker, B.A., M.A., Ph.D.: mycology
 Miss M. E. Elliott, B.A.: mycology
 S. J. Hughes, B.Sc., M.Sc., D.Sc., F.L.S.: mycology
 Miss R. Macrae, B.A., M.Sc., Ph.D.: mycology
 Miss M. K. Nobles, B.A., M.A., Ph.D.: mycology
 J. A. Parmelee, B.Sc., M.A., Ph.D.: mycology
 D. B. O. Savile, B.S.A., M.Sc., Ph.D.: mycology
 R. A. Shoemaker, B.S.A., M.S.A., Ph.D.: mycology
 Miss L. K. Weresub, B.A., M.A., Ph.D.: mycology
 A. P. Chan, B.Sc., M.Sc., Ph.D.: ornamental plants

CANADA

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A. R. T. Buckley: ornamental plants
W. E. Cordukes, B.Sc., M.Sc.: ornamental plants
E. T. McEvoy, B.Sc., M.Sc.: ornamental plants
L. C. Sherk, B.S.A., M.Sc.: ornamental plants
E. J. Walker, B.Sc., B.Land.Arch.: ornamental plants
J. Wilner, B.S.A., M.Sc., Ph.D.: ornamental plants
R. L. Taylor, B.Sc., M.Sc., Ph.D.: phanerogamic taxonomy
I. J. Bassett, B.A.: phanerogamic taxonomy
B. Boivin, B.A., L.Sc., Ph.D.: phanerogamic taxonomy
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H. Morita, B.Sc., Ph.D.: organic matter
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S. P. Mathur, B.Sc., Ph.D.: microbiology
A. J. MacLean, B.Sc., M.Sc., Ph.D.: fertility
B. J. Finn, B.S.A., M.S., Ph.D.: fertility
R. L. Halstead, B.S.A., Ph.D.: fertility
A. R. Mack, B.S.A., M.S., Ph.D.: fertility
M. Levesque, B.S.A., M.Sc., Ph.D.: fertility
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S. S. Singh, B.Sc., M.Sc., Ph.D.: physical chemistry
W. E. Nichol, B.A.Sc., M.A.Sc.: physical chemistry
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H. M. Rice, B.A.: mineralogy
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 G. E. Bucher, B.A., M.A., Ph.D.: insect pathology
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 H. L. House, B.S.A., Ph.D.: insect physiology and nutrition
 H. G. James, B.A., M.A.: predators of biting flies
 J. S. Kelleher, B.Sc., M.Sc., Ph.D., *Importation Officer*: applied biological control
 C. C. Loan, B.A., M.S., Ph.D.: forage crop insects
 J. M. Mackauer, Dr.Phil.Nat.: parasites of aphids
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 L. G. Monteith, B.S.A., M.S.A.: parasites-host preferences
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 R. W. Smith, B.S.A.: grasshopper parasites
 A. L. Turnbull, B.Sc.F., M.Sc.F., Ph.D.: population ecology
 H. G. Wylie, B.A., Ph.D.: population ecology

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 T. Dumas, Chem. Eng., M.Sc.: analytical chemistry
 R. M. Krupka, B.A., M.A., Ph.D.: enzyme kinetics
 J. R. Robinson, M.S.A., Ph.D.: radioactive tracers
 A. N. Starratt, B.Sc., Ph.D.: organic chemistry
 A. Stoessl, B.Sc., Ph.D.: organic chemistry
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 A. Vardanis, B.Sc., M.Sc., Ph.D.: comparative toxicology
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 W. A. Andreae, B.Sc. Agr., M.Sc., Ph.D.: plant physiology

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W. H. Minshall, B.S.A., M.Sc., Ph.D.: plant physiology
M. A. Venis, B.Sc., Ph.D.: plant physiology

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G. A. Nelson, B.Sc., M.Sc., Ph.D.: potato diseases
O. A. Olsen, B.S.A., M.Sc., Ph.D.: potato diseases
B. G. Penney, B.Sc., M.Sc.: vegetable crops
A. F. Rayment, B.Sc., M.Sc.: forage crops and cereals

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R. B. MacLaren: cereal breeding
J. D. E. Sterling, B.S.A., M.S.: cereal breeding

Forage Crops Nutrition and Physiology Section

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M. Suzuki, Ph.D.: plant physiology

Plant Pathology and Entomology Section

G. W. Ayers, B.Sc.Agr., M.Sc.: vegetable diseases, clubroot of crucifers
L. C. Callbeck, B.Sc.Agr.: potato blight control
J. E. Campbell, B.Sc., M.Sc.: potato diseases
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C. B. Willis, B.Sc.Agr., Ph.D.: forage crop diseases

Soils and Horticulture Section

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D. C. Munro, B.S.A., M.Sc.: soil fertility

Nova Scotia

EXPERIMENTAL FARM, Nappan. Tel.: Amherst 667-3826

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F. W. Calder, B.Sc.Agr., M.S.: pastures, plant physiology

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C. R. Blatt, B.Sc. (Delaware Valley), M.S., Ph.D. (Rutgers): plant nutrition
D. Chisholm, B.Sc. (St. F.X.): insecticide chemistry
C. R. MacEachern, B.Sc. (St. F.X.): soil chemistry
D. K. R. Stewart, B.Sc., B.A., M.Sc. (Dalhousie), Ph.D. (U.N.B.): fungicide chemistry
L. R. Townsend, B.A., B.Sc. (Acadia): plant chemistry

Entomology

A. W. MacPhee, B.Sc. Agr., M.Sc., Ph.D. (McG.), *Head*: insect ecology
C. J. S. Fox, B.S.A. (Tor.): field and vegetable crop insects
Miss H. J. Herbert, B.Sc. Agr. (McG.): mite investigations
R. P. Jaques, B.S.A., M.S.A. (Tor.), Ph.D. (Corn.): insect pathology
F. T. Lord, B.S.A. (Tor.), M.Sc. (McG.): ecology of insect predators
C. R. MacLellan, B.Sc. Agr. (McG.), M.A. (Queen's): ecology of codling moth
W. T. A. Neilson, B.Sc. (U.N.B.), M.Sc. (Corn.): apple maggot

CANADA

- N. A. Patterson, B.S.A. (McG.): orchard insects
K. H. Sanford, B.Sc. Agr., M.Sc. (McG.): predators of orchard insects
H. B. Specht, B.Sc. (McG.), M.S. (Wis.), Ph.D. (Rutgers): host-pest relationships
H. T. Stultz, B.A. (Acadia), M.Sc. (McG.): bionomics of fruit insects

Plant Pathology

- R. G. Ross, B.Sc. Agr., M.Sc. (McG.), Ph.D. (Western Ont.), *Head*: tree fruit diseases
C. O. Gourley, B.Sc. Agr. (McG.): vegetable and small fruit diseases
C. L. Lockhart, B.Sc. Agr., M.Sc. (McG.): fruit and vegetable storage diseases
Vacant: vegetable and small fruit diseases

Poultry

- F. G. Proudfoot, B.Sc. Agr. (McG.), M.S. (Corn.), *Head*: genetics
W. F. Lamoreux, B.S. (Iowa), M.S., Ph.D. (Corn.): genetics

Small Fruits and Ornamentals

- D. L. Craig, B.Sc. Agr. (McG.), M.S., Ph.D. (New Hampshire), *Head*: plant breeding
L. E. Aalders, B.Sc., M.Sc. (Acadia), Ph.D. (Corn.): cytology and genetics
I. V. Hall, B.Sc., M.Sc. (Acadia), Ph.D. (Corn.): ecology and cytogenetics of small fruits
G. S. Swain, B.S.A. (Tor.): ornamentals and greenhouse crops

Storage and Processing

- C. A. Eaves, B.S.A., M.Sc. (McG.), *Head*: controlled atmosphere storage
F. R. Forsyth, B.A. (Queen's), Ph.D. (Tor.): plant physiology
T. Fuleki, B.Sc. (Bud.), M.Sc. (McG.): fruit juices and fermentation
D. H. Webster, B.Sc., M.Sc. (Acadia), Ph.D. (Calif.): plant physiology
D. F. Wood, B.Sc. Agr., M.Sc. (McG.): food technology
Vacant: food processing

Tree Fruits

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A. D. Crowe, B.Sc. Agr. (McG.), M.Sc., Ph.D. (Corn.): tree fruit breeding

Weeds, Vegetables and Project Farms

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E. W. Chipman, B.Sc. Agr. (McG.): vegetable crops
G. G. Smeltzer, B.Sc. Agr. (McG.): forage and pasture crops

New Brunswick

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 C. W. B. Maxwell, B.S.A., M.Sc. (McG.): tree fruit insects
 D. D. Pond, B.Sc. (U.N.B.): vegetable insects
 R. G. White, B.S.A. (Tor.): tree fruits and vegetables
 G. W. Wood, B.Sc. (U.N.B.), M.A. (Qu.): small fruit insects

Plant Pathology and Entomology

- R. H. Bagnall, B.S.A., M.Sc. (McG.), Ph.D. (Wis.): potato viruses
 Mrs J. B. Adams, B.A. (U.N.B.), M.Sc. (Me.): aphid populations
 R. H. E. Bradley, B.Sc. (U.N.B.), Ph.D., D.Sc. (Lond.): insect vectors
 Mrs. M. E. MacGillivray, B.A. (U.N.B.), M.Sc. (Mich.), D.Sc. (Leiden): aphid systematics and ecology
 J. P. MacKinnon, B.S.A. (McG.), M.Sc. (Wis.): virus transmission

Potato Breeding

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 M. S. Cipar, B.S., M.S. (Marquette), Ph.D. (Wis.): cytogenetics (haploidy)
 H. T. Davies, B.S.A. (Tor.): potato quality
 L. A. Dionne, B.Sc. (U.N.B.), M.Sc. (Wis.), Ph.D. (Birm.): cytogenetics (wild species)
 W. A. Hodgson, B.S.A., M.Sc. (McG.): potato late blight
 C. H. Lawrence, B.S.A., M.Sc. (McG.): potato scab
 J. W. McAllan, B.Sc., M.Sc. (U.N.B.), Ph.D. (West.): physiology and biochemistry
 J. Munro, B.Sc., M.Sc. (Dunelm): potato viruses
 D. A. Young, B.S.A. (McG.), M.Sc., Ph.D. (Wis.): genetics and processing varieties

Soils

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 K. K. Langmaid, B.Sc., M.Sc. (U.N.B.): pedology and soil survey
 J. K. MacMillan, B.S.A. (McG.): pedology and soil survey
 G. R. Saini, B.S.A., M.S.A. (Pb.), Ph.D. (Ohio): soil physics
 C. Wang, B.S.A. (Taiwan), M.S. (Guelph): pedology and soil survey

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C. S. Bernard, B.S.A. (Laval), M.Sc., Ph.D. (Wis.): animal science—breeding

C. D. T. Cameron, B.S.A., M.Sc. (McG.): animal science—nutrition

G. Lalande, B.A., B.S.A. (Montr.): animal science—management studies (beef cattle)

C. E. L. Lachance, B.A., B.S.A. (Laval), M.Sc. (McG.): plant science—grasses

H. Gasser, B.S.A., M.Sc. (McG.), Ph.D. (Nott.): plant science—legumes

A. E. Ouellette, B.S.A. (Montr.): plant science—cereals

J. L. Dionne, B.A., B.S.A. (Laval), Ph.D. (Wis.): soil science—fertility

M. J. D'Aoust, B.S.A. (Tor.), Ph.D. (R'dg.): soil science—soil physics

RESEARCH STATION, La Pocatière, Que. Tel.: 856-3141

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M. R. Bullen, B.Sc., M.Sc.: plant breeding; grasses; cytogenetics

J. M. Girard, B.A., B.S.A., M.S.A.: plant breeding; legumes

J. E. Godbout, B.A., B.S.A.: weed control and special crops

F. W. Pauli, D.Phil., D.Sc.: soil fertility; humus

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C. Aubé, B.Sc., M.Sc., Ph.D.: forage crop diseases

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J. Santerre, B.A., B.Sc.A., M.Sc.: potato diseases

R. Paquin, B.A., B.S.A., M.Sc., Ph.D.: plant physiology; host-parasite relationship

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 L. A. Jacobson, C.D., B.Sc. (Alta.), M.Sc. (Mont.): ecology and control of pale western and other cutworms
 R. Kasting, B.Sc., M.Sc. (Alta.), Ph.D. (Calif.): plant, insect chemistry
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 R.-O. Lachance, B.A., B.Sc. Agr., M.Sc., Ph.D., *Assistant to the Dean, Professor of Plant Pathology*: boron deficiency diseases
 L. Bourque, B.A., B.Sc. Agr., M.Sc., Ph.D., *Secretary of the Faculty, Professor of Horticulture*: vegetable crops

DEPARTMENT OF AGRICULTURAL ECONOMICS

- M. Carel, B.A., Ing. Agr. (INA Paris), *Associate Professor and Chairman of the Department*: farm management
 A. Bouchard, B.A., B.Sc. Agr., M.Sc., *Assistant Professor*: education, consultation and extension
 B. Dumais, B.A., B.Sc. Agr., M.Sc. Com., *Assistant Professor*: farm accounting
 F. Ouellet, B.A., B.Ped., M.Sc. Soc., *Assistant Professor*: marketing
 M. Roy, B.Sc. Agr., *Assistant Professor*: labour organization
 J.-P. Wampach, B.A., Ing. Agr. (Louvain), Licencié ès Sc. économiques, Ph.D., *Assistant Professor*: agricultural econometry

DEPARTMENT OF AGRICULTURAL ENGINEERING

- J.-A. Choinière, B.Sc. Agr., B.Sc.G.R., M.Sc., *Associate Professor and Chairman of the Department*: farm buildings
 J.-M. Fortin, B.A., B.Sc. Agr., M.Sc., *Associate Professor*: agricultural machinery
 Y. Chartier, B.A., B.Sc. Agr., B.Sc.G.R., *Associate Professor*: farm electrification
 P. Jutras, B.Sc. Agr., M.Sc.G.R., *Assistant Professor*: hydrology, irrigation and protection from frost

DEPARTMENT OF AGROBIOLOGY

- A. ALARIE, B.Sc. Agr., M.Sc., Ph.D., *Professor of Microbiology and Chairman of the Department*: fermentation of compost

- L. Cinq-Mars, B.A., B.Sc. Agr., M.Sc., *Associate Professor and Curator of the Herbarium*: plant taxonomy; the genus *Amelanchier*; phenology
- F.-M. Gauthier, B.Sc. Agr., M.Sc., *Associate Professor*: genetics of cereals and cereal breeding
- R.-A. Lachance, B.Sc. Agr., M.Sc., Ph.D., *Associate Professor*: nutrition of bacteria
- J.-P. Paré, B.Sc. Agr., M.Sc., Ph.D., *Assistant Professor*: quantitative genetics
- R. Van Den Hende, B.Sc., *Assistant Professor and Assistant Curator of the Herbarium*: plant propagation and adaptation, floriculture

DEPARTMENT OF ANIMAL SCIENCE

- L.-A. Charette, B.Sc. Agr., M.Sc., Ph.D., *Professor of Animal Husbandry and Chairman of the Department*: breeding of beef cattle and cross breeding of beef dairy cattle
- R. Belzile, B.A., B.Ph., B.Sc. Agr., M.Sc., Ph.D., *Assistant Professor*: animal feeding, biological value of proteins and trace elements for monogastric and fur animals
- G. Brisson, B.A., B.Sc. Agr., M.Sc., Ph.D., *Professor of Animal Nutrition*: fat utilization by the young ruminants; amino acids utilization by birds and young mammals; indicator methods in digestibility studies
- J.-P. Lemay, B.A., B.Sc. Agr., M.Sc., *Associate Professor*: physiology of reproduction in sheep and cattle

DEPARTMENT OF FOOD SCIENCE

- R.-R. Riel, B.Sc. Agr., M.Sc., Ph.D., *Professor of Food Chemistry and Chairman of the Department*: modification of chemical and physical properties of fats
- M. Boulet, B.Sc. Agr., M.Sc., Ph.D., *Professor of Food Science*: refrigerated storage of fresh fruits and vegetables; inactivation of enzymes in foods; composition and properties of pectic substances; mineral composition of milk
- J.-P. Julien, B.A., B.Sc. Agr., M.Sc., *Associate Professor*: fractionation of protein in milk products; fermentation and irradiation of apple products
- J.-R. Moreau, B.A., B.Sc. Pêch., Ph.D., *Associate Professor*: tenderization, tenderness and chemical composition, freeze-drying and emulsion of meat and meat products
- G.-B. Martin, B.A., B.Sc. Pêch., M.Sc., *Assistant Professor*: freeze drying of fish and fish products, biosynthesis of cholesterol

DEPARTMENT OF PLANT SCIENCE

- J.-E. Chevrette, B.A., B.Sc. Agr., Ph.D., *Professor of Plant Breeding*: maize and special crops
- R. Bédard, B.Sc. Agr., M.Sc., *Assistant Professor*: horticulture, small fruits
- E. Campagna, B.A., B.Sc. Agr., D.Sc. Nat., *Professor of Botany*: diseases of potatoes, rhizoctonia. Director, research station, Les Buissons, Côté Saguenay, Québec
- P. Gervais, B.Sc. Agr., M.Sc., Ph.D., *Professor of Field Crops*: forage crops management
- V. Lavoie, B.Sc. Agr., M.Sc., D.Sc. Nat., *Assistant Professor*: plant ecology and phytosociology
- H.-P. Therrien, B.A., B.Sc. Agr., M.Sc., Ph.D., *Assistant Professor*: plant physiology, cold resistance

DEPARTMENT OF SOIL SCIENCE

- L. O'Grady, B.A., B.Sc. Agr., Ph.D., *Professor of Pedology and Chairman of the Department*: soil fertility, orchard fertilization
- R. Baril, B.Sc. Agr., M.Sc., *Associate Professor*: soil genesis morphology and classification

CANADA

- S.-J. Bourget, B.Sc. Agr., M.Sc., Ph.D., *Professor of Soil Physics: soil-water relations*
G.-J. Ouellette, B.A., B.Sc. Agr., Ph.D., *Professor of Soil Fertility: minor elements*

DEPARTMENT OF DIETETICS

- Sister Ste-Marguerite des Vertues, B.Sc., M.Sc., *Professor of Dietetics and Director of Department: history of food and of costume*
Sister Ste-Jeanne de Jésus, B.Sc., M.Sc., Ph.D., *Professor of Human Nutrition: lipids and vitamin B₆*
Sister Ste-Gertrude de la Charité, B.A., M.Sc., Ph.D., *Associate Professor: histochemistry of metabolic products*
Sister Ste-Françoise-Paule, B.Sc., M.Sc., *Associate Professor: psychomotor learning*
Sister Ste-Bernadette de l'Eucharistie, B.Sc., *Assistant Professor: clothing budget*
Sister Ste-Gertrude de Jésus, B.Sc., M.Sc., *Assistant Professor: microbiology of food preparations*
Sister Ste-Yolande-Maria, B.Sc., M.Sc., *Assistant Professor: food chemistry; pigments and cooking*
Sister Ste-Claire des Anges, B.A., B.Sc., M.Sc., *Assistant Professor: dieto-therapy, therapeutic diets for diabetics*
France Dufour, B.Sc., *Assistant Professor: woman employment and family budget*
M. Raymond, B.Sc., *Assistant Professor: lipids of meat*
Y. Prémont, B.Sc., *Assistant Professor: food service administration*

UNIVERSITÉ DE MONTREAL

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- J. Dufresne, B.A., B.Sc. Agr., D.V.M., D.V.P.H., L.Ped., *Director*
E. Jacques, B.A., D.V.M., *Assistant Director and Director of Extension*
L. Cournoyer, B.Sc. Agr., D.V.M., *Director of Studies*
J. Saint-Georges, D.V.M., *Secretary*
J. D. Nadeau, B.A., D.V.M., M.Sc., *Treasurer*
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O. Garon, B.A., D.V.M., M.Sc., *Chief, Department of Fundamental Sciences*
A. Lagacé, D.V.M., Ph.D., *Chief, Department of Pathology*
R. Pelletier, B.A., D.V.M., *Chief of Clinics*
Prof. J.-R. Borduas
Prof. J.-G. Lafortune, B.A., D.V.M.
Prof. J. Flipo, B.A., D.V.M.
Prof. R. J. Harrison, B.Sc. Agr., M.Sc., Ph.D.
Prof. F. Lévesque
Prof. J. D. Mongeau, B.A., D.V.M., M.V.Sc.
Prof. J. Nantel, D.V.M., D.V.P.H.
Prof. J. Piérard, D.V.M.

McGILL UNIVERSITY

Faculty of Agriculture

Macdonald College, Que. Cables: Ste. Anne de Bellevue

- H. G. Dion, Ph.D., *Dean, Faculty of Agriculture, Professor of Soil Chemistry*

DEPARTMENT OF AGRICULTURAL CHEMISTRY

- R. H. Common, D.Sc., *Professor and Chairman of the Department: avian bio-chemistry; food chemistry*

- P. A. Anastassiadis, Ph.D., *Associate Professor*: dairy chemistry; food analysis
 B. E. Baker, Ph.D., *Professor*: protein chemistry; flavour chemistry
 G. O. Henneberry, M.Sc., *Assistant Professor*: chemistry of milk proteins

DEPARTMENT OF AGRICULTURAL ECONOMICS

- D. L. MacFarlane, Ph.D., *Professor and Chairman of the Department*: agricultural economics
 C. B. Haver, Ph.D., *Professor*: agricultural economics

DEPARTMENT OF AGRICULTURAL ENGINEERING

- R. S. Broughton, S.M., *Assistant Professor and Chairman of the Department*: hydrology, water control
 J. H. Cooper, B.Sc.Agr., *Associate Professor*: agricultural machinery
 E. R. Norris, B.S.A., *Lecturer*: instrumentation
 J. R. Ogilvie, M.S.A., *Assistant Professor*: agricultural structures, environment control

DEPARTMENT OF AGRONOMY

- H. A. Steppler, Ph.D., *Professor and Chairman of the Department*: clover breeding, mainly red clover; pasture studies; fertility studies
 R. I. Brawn, Ph.D., *Professor*: maize breeding; maize genetics
 J. S. Bubar, Ph.D., *Assistant Professor*: grasses and legume breeding and genetics, mainly *Lotus*
 H. R. Klinck, Ph.D., *Associate Professor*: cereal breeding, mainly oats and barley

DEPARTMENT OF AGRICULTURAL PHYSICS

- R. H. Douglas, Ph.D., *Professor and Chairman of the Department*: cloud and precipitation physics
 W. Rowles, Ph.D., *Professor*: general physics

DEPARTMENT OF ANIMAL SCIENCE

- L. E. Lloyd, Ph.D., *Professor and Chairman of the Department*: nutrition
 R. D. Baker, Ph.D., *Assistant Professor*: animal physiology
 C. O. Briles, Ph.D., *Associate Professor*: avian genetics
 E. Donefer, Ph.D., *Assistant Professor*: nutrition
 H. C. Gibbs, Ph.D., *Associate Professor*: animal pathology
 P. Y. Hamilton, M.Sc., *Assistant Professor*: animal production
 R. O. Hawes, Ph.D., *Assistant Professor*: avian genetics and physiology
 H. F. MacRae, Ph.D., *Assistant Professor*: biochemistry
 B. E. McDonald, Ph.D., *Assistant Professor*: nutrition
 J. E. Moxley, Ph.D., *Assistant Professor*: animal breeding
 N. Nikolaiczuk, Ph.D., *Professor*: avian nutrition

DEPARTMENT OF ENTOMOLOGY

- D. K. McE. Kevan, Ph.D., *Professor and Chairman of the Department*: soil zoology; taxonomy and general biology of Orthoptera
 J. E. McFarlane, Ph.D., *Associate Professor*: insect physiology; insect biochemistry
 F. O. Morrison, Ph.D., *Professor*: insect toxicology; general economic entomology
 V. R. Vickery, Ph.D., *Assistant Professor and Curator, Lyman Entomological Museum*: taxonomy and ecology of Orthoptera; apiculture

DEPARTMENT OF GENETICS

- J. W. Boyes, Ph.D., *Molson Professor and Chairman of Department*: cytogenetics
 W. F. Grant, *Associate Professor*: cytogenetics of *Lotus*

CANADA

DEPARTMENT OF HORTICULTURE

- H. R. Murray, M.Sc., *Professor and Chairman of the Department*: breeding and improvement of vegetables; general horticulture; potato production
J. David, Ph.D., *Associate Professor*: food processing and cold storage
C. D. Taper, Ph.D., *Associate Professor*: pomology-propagation and physiology

DEPARTMENT OF MICROBIOLOGY

- A. C. Blackwood, Ph.D., *Professor and Chairman of the Department*: microbial physiology; fermentations
E. S. Idziak, D.Sc., *Assistant Professor*: food microbiology irradiation; public health bacteriology
R. Knowles, Ph.D., *Assistant Professor*: soil microbiology; microbial flora of native soils
R. A. MacLeod, Ph.D., *Professor*: microbial biochemistry; marine microbiology

DEPARTMENT OF PLANT PATHOLOGY

- W. E. Sackston, Ph.D., *Professor and Chairman of the Department*: biology and epidemiology of plant disease
E. O. Callen, Ph.D., *Associate Professor*: plant taxonomy; ethnobotany
R. H. Estey, Ph.D., *Associate Professor*: soil fungi, nematology
R. L. Pelletier, Ph.D., *Professor*: physiology of parasitism

DEPARTMENT OF SOIL SCIENCE

- B. P. Warkentin, Ph.D., *Associate Professor and Chairman of the Department*: soil water
A. F. MacKenzie, Ph.D., *Assistant Professor*: soil chemistry, soil fertility
J. F. G. Millette, Ph.D., *Associate Professor*: soil classification and land use

DEPARTMENT OF WOODLOT MANAGEMENT

- A. R. C. Jones, M.Sc., *Assistant Professor and Chairman of the Department*: woodlot management and economics
J. R. Bider, M.Sc., *Assistant Professor*: community ecology and wildlife management
J. D. MacArthur, B.Sc.F., *Forester and Curator, Morgan Arboretum*: silviculture and forest management

INSTITUTE OF PARASITOLOGY

- K. G. Davey, Ph.D., *Associate Professor and Director*: histology and physiology of helminths and insects
R. P. Harpur, Ph.D., *Assistant Professor*: biochemistry
E. Meerovitch, Ph.D., *Assistant Professor*: intestinal protozoa, helminthology
J. Nowosielski, Ph.D., *Research Associate*: ticks
C. E. Tanner, Ph.D., *Associate Professor*: immunochemistry of parasitic infections

UNIVERSITY OF GUELPH

Guelph, Ontario

Ontario Agricultural College

DEPARTMENT OF AGRICULTURAL ECONOMICS

- S. H. Lane, B.S.A., M.Sc. (Sask.), *Head of Department*: agricultural policy
W. M. Braithwaite, C.A., B.A. (West.Ont.): accounting and finance
J. B. Britney, B.S.A. (Tor.), M.S., Ph.D. (Purd.): marketing and statistics
J. H. Clark, B.S.A., M.S.A. (Tor.): marketing
A. Lerner, B.Sc.Econ. (Lond.): economic theory

- M. A. MacGregor, B.S.A. (Tor.), M.S.A., Ph.D. (Corn.): market and price analysis, and statistics
 R. G. Marshall, B.S.A. (Tor.), M.S. (Mich.): marketing and prices
 W. A. McBride, B.S.A., M.S.A. (Tor.): production economics and farm management
 K. J. McKenzie, B.S.A. (Tor.): farm finance
 B. B. Perkins, B.Sc.Agr. (Lond.), M.A.Econ. (Manc.), Ph.D. (Mich.): marketing and agricultural policy
 D. H. Plaunt, B.Sc.Agr. (McG.), M.S. (Ky.), Ph.D. (Mich.): farm management
 R. S. Rodd, B.A. (Br.Col.), M.Sc.Econ. (Lond.): economic development and land economics
 G. I. Trant, B.S.A. (Tor.), M.S., Ph.D. (Mich.): production economics and agricultural policy
 P. A. Wright, B.Sc.Agr. (McG.), M.S., Ph.D. (Mich.): production economics and farm management

SCHOOL OF AGRICULTURAL ENGINEERING

- C. G. E. Downing, B.E. (Sask.), M.Sc. (Iowa), *Professor and Director*
 H. D. Ayers, B.E. (Sask.), M.S. (Wash.): hydrology
 W. K. Bilanski, B.S.A. (Tor.), M.S. (Mich.), Ph.D. (Mich.): aerodynamics of grain
 D. E. Clark, B.S.A. (Tor.): tillage machinery
 S. H. Collins, B.A. (Tor.), M.A. (Tor.): surface area studies of materials
 R. R. Grinnell, B.Sc. (Iowa), M.Sc. (Minn.): instrumentation and control
 R. M. Halyk, B.E. (Sask.), M.S. (Nebr.): forage equipment
 F. R. Hore, B.S.A. (Tor.), M.S. (Mich.): drainage and irrigation
 R. W. Irwin, B.S.A. (Tor.), M.S. (Iowa): drainage
 J. H. Lee, B.Sc. (Sask.), M.Sc. (Tor.): harvesting machinery
 H. K. Malinowski, Dip.Ing. (War.): structural design
 D. R. Pattie, B.Sc. (Glas.), Ph.D. (Glas.): environmental control of animal shelters
 J. Pos, B.S.A. (Tor.), M.S.A. (Tor.), M.S. (Mich.): farm buildings
 P. H. Southwell, M.S. (Sask.): tractor power
 W. N. Stammers, B.S.A. (Tor.), M.S.A. (Tor.), Ph.D. (Ore.): hydrology
 F. H. Theakston, B.Sc. (Acadia), B.E. (Nova Sc.), M.E. (Nova Sc.): structural design
 J. A. Underwood, B.S.A. (Tor.), B.A.Sc. (Tor.)

DEPARTMENT OF ANIMAL SCIENCE

- J. C. Rennie, B.S.A., M.S., Ph.D. (Iowa), *Head of Department*
 G. H. Bowman, B.S.A., M.Sc., Ph.D. (Okla.): swine breeding
 T. D. Burgess, B.S.A., M.S.A., Ph.D. (Nott.): beef cattle nutrition
 E. B. Burnside, B.S.A., M.S.A., Ph.D. (N. C.): dairy cattle breeding
 E. Etter, B.Sc., M.S.A. (Tor.): animal breeding
 R. P. Forshaw, B.S.A., M.Sc. (McG.): swine production
 D. G. Grieve, B.S.A., M.S.A. (Tor.): dairy cattle management
 R. H. Ingram, B.S.A., M.N.S., Ph.D. (Penn.): research in meats
 V. G. MacKay, B.Sc., M.Sc., Ph.D. (Alta.): animal nutrition
 G. K. Macleod, B.S.A., M.S., Ph.D. (Calif.): ruminant nutrition
 J. W. Macpherson, B.V.Sc., D.V.Sc. (Tor.): animal reproduction
 J. G. Norrish, B.S.A. (Tor.): swine management
 G. C. Smith, B.S.A., M.S.A. (Tor.): animal breeding

DEPARTMENT OF APICULTURE

- G. F. Townsend, B.S.A., M.S.A. (Tor.), *Head of Department*: fruit pollination; physiological activity of honeybee products; physical properties of honey and their application to honey marketing

CANADA

- R. W. Shuel, B.S.A., M.S.A., Ph.D. (Ohio): nectar secretion; floral physiology; polymorphism in social insects
M. V. Smith, B.S.A., M.S.A., Ph.D. (Corn.): pollination; bee breeding and stock improvement; larval nutrition and queen differentiation

DEPARTMENT OF BOTANY

- F. H. Montgomery, B.A. (McM.), M.A. (McM.), *Head of Department*: taxonomy of flowering plants
G. L. Barron, B.Sc. (Glas.), M.S.A., Ph.D. (Iowa): mycology and genetics of fungi
D. M. Britton, B.A., Ph.D. (Virgin.): cytogenetical studies, ferns
L. V. Busch, C.D., B.S.A., M.S.A., Ph.D. (Wis.): vegetable pathology
H. M. Dale, B.A., M.A., Ph.D. (Tor.): ecology of plants
L. V. Edgington, B.Sc. (Calif.), Ph.D. (Wis.): plant pathology, chemical control of plant diseases
R. A. Fletcher, B.Sc. Agr. Hons. (Delhi), M.S.A. (B.C.), Ph.D. (Alta.): plant physiology, growth substances
S. G. Fushtey, B.Sc. Agr. (Alta.) M.Sc. (Alta.), Ph.D. (Lond.), D.I.C. (Lond.): cereal grain diseases, plant nematology
C. B. Kelly, B.S.A., M.S. (Mich.): extension
B. H. MacNeill, B.Sc. (Acadia), Ph.D. (Tor.): pathology of canning crops; virus diseases
W. A. Quick, B.A., B.Ed., M.A., Ph.D. (Sask.): plant physiology: the relationship of nucleic acids to obligate parasitism
R. T. Riddell, B.A. (McM.), M.A. (McM.): experimental morphology and anatomy
C. M. Switzer, B.S.A., M.S.A., Ph.D. (Iowa): plant physiology, weed control

DEPARTMENT OF CROP SCIENCE

- W. E. Tossell, B.S.A., M.S.A., Ph.D. (Wis.), *Head of Department*: plant competition and management studies in forage grasses and legumes
G. W. Anderson, B.S.A., M.S.A. (Tor.): weed competition effects and weed control studies
J. D. Bandeen, B.S.A., M.S.A., Ph.D. (Wis.): weed physiology emphasizing perennial weeds
B. R. Christie, B.S.A., M.S.A., Ph.D. (Iowa): forage grass breeding and genetic studies in fertility and sterility mechanisms
R. S. Fulkerson, B.S.A., M.S.A. (Tor.): grassland management studies; forage conservation and seedling establishment
E. E. Gamble, B.S.A., M.S.A., Ph.D. (Iowa): breeding and genetic studies in corn
B. L. Harvey, B.S.A., M.S.A., Ph.D. (Calif.): forage and barley cytology and cytogenetics
D. J. Hume, B.S.A., M.S.A., Ph.D. (Iowa): physiology of crop yield
G. E. Jones, B.S.A., M.S.A. (Tor.): crop management and weed control studies
L. W. Kannenberg, B.S., M.S., Ph.D. (Calif.): corn breeding and genetics of yield
D. N. Mowat, B.Sc., M.Sc., Ph.D. (Corn.): quality studies in forage grasses and legumes
E. Reinbergs, B.Agr., M.S.A., Ph.D. (Manit.): barley and oat breeding and genetic studies
N. C. Stoskopf, B.S.A., M.S.A., Ph.D. (McG.): winter wheat breeding and physiology of yield in cereals
J. W. Tanner, B.S.A., M.S.A., Ph.D. (Iowa): physiology of crop yield with emphasis on maize and soybeans
B. E. Twamley, B.S.A., B.A., M.Sc., Ph.D. (Sask.): breeding and genetic studies in *Lotus* spp.

- J. E. Winch, B.S.A., M.S.A., Ph.D. (Corn.): management studies in birdsfoot trefoil and alfalfa and physiology of yield in forages
 W. S. Young, B.S.A., M.S.A., Ph.D. (Corn.): regional testing of cereals, maize and forage crops

DEPARTMENT OF DAIRY SCIENCE

- D. M. Irvine, B.S.A., M.Sc. (Wis.), Ph.D. (Wis.), *Head of Department*: cheese and cheese products
 D. R. Arnott, B.S.A. (Manit.), M.Sc. (Minn.), Ph.D. (Penn.): processing and merchandizing bottled milk
 D. A. Biggs, B.Sc. (Sask.), M.S.A.: study of the methods of analysis and physical properties of milk
 D. H. Bullock, B.S.A., M.S.A., Ph.D. (Wis.): dried milk products
 C. L. Duitschaeffer, B.Sc. (Ghent), M.S.A. (Guelph): dairy microbiology
 A. G. Leggatt, B.S.A., M.S.A.: bacteriology of dairy products
 L. M. McKnight, B.Sc., M.Sc. (Alta.): fats and oils
 A. N. Myhr, B.S.A. (Sask.), M.S., Ph.D. (Minn.): microbiology of dairy products
 A. M. Pearson, B.S.A., M.S. (Iowa): frozen dairy products

DEPARTMENT OF EXTENSION EDUCATION

- H. W. Caldwell, B.S.A., M.Sc.Ed. (Corn.), Ph.D. (Ore.), *Head of Department*
 Helen C. Abell, B.H.Sc. (Tor.), M.Sc., Ph.D. (Corn.), *Professor*
 G. L. Warlow, B.S.A. (Tor.), M.A. (Wayne), *Professor*

DEPARTMENT OF HORTICULTURE

- R. J. Hilton, B.Sc. Agr., Ph.D., *Head of Department*: anatomical and growth periodicity studies
 B. Barabas, Ing. Agr.: chemical tests for quality control
 W. D. Evans, B.Sc. Agr., M.Sc., Ph.D.: haploidy induction in *Fragaria* and *Rubus*; cytogenetics of *Fragaria*
 E. W. Franklin, B.S.A., M.S.A.: storage of produce in relation to tissue metabolism
 R. Goodwin-Wilson, B.S.A.: introduction and culture of floricultural crops
 T. O. Graham, B.S.A., M.S.: chromosome mapping and breeding for high colour in *Lycopersicon*
 Patricia M. Harney, B.Sc. Agr., M.Sc., Ph.D.: genetics and cytogenetics of *Pelargonium*; breeding floricultural crops
 E. C. Loughheed, B.S.A., M.S.A., Ph.D.: postharvest physiology and materials handling
 B. A. Rieger, Ing. Agr., M.S.A.: breeding and management, olericulture
 J. W. Riekels, B.S., M.S., Ph.D.: radioisotope application in plant nutrition; organic soil management and use
 R. G. Rowberry, B.S.A., M.S.A.: potato production and variety evaluation
 J. T. Sykes, B.Sc. Hort., B.Sc. Bot.: nursery management; woody plants and ground covers
 J. C. Taylor, R.H.S. (Cert.): interspecific hybridization in *Lilium* and *Forsythia*
 B. J. E. Teskey, B.S.A., M.S.A.: tree fruit rootstock and cultural investigations
 H. Tiessen, B.S.A., M.S., Ph.D.: physiology of vegetable plants
 C. G. Waywell, B.S.A., M.Sc.: herbicide investigations
 A. Zitnak, Ing. Agr., M.Sc., Ph.D.: biochemical investigations in quality control; processing technology

DEPARTMENT OF MICROBIOLOGY

- E. H. Garrard, B.S.A., M.S.A., F.A.P.H.A., *Professor and Head of Department*: bacterial diseases of plants

CANADA

- G. W. Anderson, B.S.A., M.Sc., Ph.D., *Professor*: salmonellae and intestinal flora in animals
J. A. Carpenter, C.D., B.S.A., M.S.A., *Associate Professor*: plant diseases
F. E. Chase, B.S.A., M.S.A., Ph.D., *Professor*: soil microbiology
C. T. Corke, B.Sc., M.Sc., Ph.D., *Associate Professor*: microbiology of forest soils
J. D. Cunningham, B.S.A., M.S.A., *Assistant Professor*: dairy microbiology
R. J. Douglas, B.S.A., M.S.A., Ph.D., *Associate Professor*: serology and immunology
N. A. Epps, B.S.A., M.S.A., *Assistant Professor*: avian blood studies
K. F. Gregory, B.S.A., M.Sc., Ph.D., *Associate Professor*: microbial genetics, virology, isoenzymes
Margaret M. Hauser, B.S.A., M.S.A., *Assistant Professor*: systematic bacteriology
R. A. Johnston, B.S.A., M.S.A., *Associate Professor*: food microbiology
D. C. Jordan, B.S.A., M.S.A., Ph.D., *Associate Professor*: bacterial physiology, antibiotics, root-nodule bacteria
L. A. McDermott, B.S.A., M.S.A., *Professor*: bacterial diseases in fish
J. B. Robinson, B.S.A., M.S.A., Ph.D., *Associate Professor*: nitrogen transformation in soil
R. E. Smith, B.S.A., M.S.A., *Assistant Professor*: fermentation, waste utilization

DEPARTMENT OF NUTRITION

- S. J. Slinger, B.S.A., M.S.A. (Tor.), Ph.D. (Corn.), *Head of Department*: animal and poultry nutrition
D. Arthur, B.S.A., M.S.A. (Tor.): mineral nutrition and metabolism; inorganic analysis
H. S. Bayley, A.R.I.C., B.Sc. (R'dg.), Ph.D. (Nott.): energy utilization and metabolism
E. V. Evans, B.A., M.A. (W. Ont.): biochemistry and nutrition of vitamins; mink nutrition
D. C. Hill, B.S.A., M.S.A. (Tor.), Ph.D. (Minn.): protein and amino acid nutrition and metabolism; nutritional muscular dystrophy
I. Motzok, B.S.A., M.S.A., Ph.D. (Tor.): mineral nutrition and metabolism; enzyme kinetics
Miss E. M. Olsen, B.Sc. (Copen.), M.S.A. (Tor.): protein and amino acid nutrition and metabolism
M. Stefanovic, Ph.D. (Serb. Acad. Sci., Belgrade): biochemical methodology; amino acid analysis
B. L. Walker, A.R.I.C. (Liv.), Ph.D. (Ill.): lipid nutrition and metabolism; methodology in gas liquid chromatography

DEPARTMENT OF POULTRY SCIENCE

- J. R. Cavers, M.S. (Minn.): *Head of Department*
G. W. Friars, M.Sc., Ph.D. (Purdue): genetic studies of turkeys and pilot organisms
G. W. Fuller, M.A. (Tor.), Ph.D. (Mass.): in charge of food science
F. N. Jerome, M.S.A. (Tor.), Ph.D. (Corn.): in charge of poultry genetics
E. T. Moran, M.S., Ph.D. (Wash.): biochemistry and nutrition
H. L. Orr, M.S. (Penn.): products technology
W. F. Pepper, M.S.A. (Tor.): nutritional research
B. S. Reinhart, M.S.A. (Tor.): genetic research
J. D. Summers, M.S.A. (Tor.), Ph.D. (Rutgers): in charge of poultry nutrition
J. P. Walker, M.S. (Penn.): in charge of poultry management

DEPARTMENT OF SOIL SCIENCE

- B. C. Matthews, B.S.A. (Tor.), A.M. (Mo.), Ph.D. (Corn.), *Head of Department*: soil fertility; chemistry of soil in relation to nutrient availability for plant growth

- T. E. Bates, B.S.A. (Tor.), M.S. (N.C.), Ph.D. (Iowa): soil fertility; fertilizer use on field crops
- D. M. Brown, B.S.A., M.S.A. (Tor.), Ph.D. (Iowa): crop ecology and climatology; effect of weather on crop yields
- D. E. Elrick, B.S.A. (Tor.), M.S., Ph.D. (Wis.): soil physics; miscible displacement processes and soil pollution
- T. J. Heeg, B.S.A., M.S.A. (Tor.): soil fertility; control of soil reaction, calcium fertility and liming in relation to yields and nutrient content of crops
- D. W. Hoffman, B.S.A., M.S.A. (Tor.): pedology; land use and conservation
- J. W. Ketcheson, B.S.A. (Tor.), M.S., Ph.D. (Ill.): soil fertility; soil nutrient behaviour in relation to plant nutrition
- K. M. King, B.S.A. (Tor.), M.S., Ph.D. (Wis.): agrometeorology; studies of physical environment of field crops
- T. H. Lane, B.S.A., M.S.A. (Tor.): soil fertility; micronutrient needs for field crops
- M. H. Miller, B.S.A. (Tor.), M.S., Ph.D. (Purd.): soil fertility; relationships between plant growth and nutrient absorption by crops
- R. Protz, B.S.A., M.S.A. (Sask.), Ph.D. (Iowa): soil morphology, genesis and classification
- R. W. Sheard, B.S.A. (Sask.), M.S.A. (Tor.), Ph.D. (Corn.): soil fertility, mineral nutrition and growth of forage crops
- J. A. Smith, B.S.A., M.S.A. (Tor.): soil fertility; the development and calibration of soil testing methods
- R. L. Thomas, B.Sc., M.Sc. (Alta.), Ph.D. (Ohio): soil biochemistry; chemistry and reactions of soil organic matter
- L. R. Webber, B.S.A. (Tor.), M.S. (Corn.): soil physics; soil and water renovation practices (pollution, erosion)
- A. L. Willis, B.S.A., M.S. (Wis.), Ph.D. (Wis.): soil chemistry; chemistry of organic soils and study of micronutrients

DEPARTMENT OF ZOOLOGY

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- W. C. Allan, C.D., B.S.A., M.S.A. (Tor.): livestock insects
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- D. H. Pengelly, B.Sc. (Alta.), M.S.A. (Tor.), Ph.D. (Corn.): Hymenoptera
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TEXTILE SCIENCE

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Wellington College

DEPARTMENT OF CHEMISTRY

H. E. Braun, B.S.A., M.S.A. (Tor.): spectrographic analysis

DEPARTMENT OF MATHEMATICS AND STATISTICS

G. C. Ashton, B.S.A. (Tor.), M.Sc. (McG.), Ph.D. (N.C.): methodology in experimental statistics

Kemptville Agricultural School

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A. M. Barr, B.S.A. (Tor.), *Principal*

F. J. Parish, B.S.A. (Tor.): land improvement

J. A. Dalrymple, B.S.A. (Tor.): animal science

J. S. Gardiner, B.S.A. (Tor.), M.S.A. (Tor.): chemistry and soils

O. R. Irvine, B.S.A. (Tor.), M.S.A. (Tor.): dairy products processing

J. M. Purvis, B.A. (Qu.): economics

A. G. Teskey, B.S.A. (Tor.), M.S.A. (Tor.): farm management

F. A. Stinson, B.S.A. (Tor.), M.S.A. (Tor.), Ph.D. (N.C.): crop science

A. V. Skepasts, B.Sc. Agr. (McG.), M.Sc. (McG.): crop science

R. E. Class, B.S.A. (Tor.): horticulture

J. P. Mansfield, B.Sc.F. (N.B.), M.A. (N.B.): floriculture

A. M. Morphet, B.S.A. (Tor.): poultry science

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FACULTY

E. L. Woodley, B.S.A., *Director*

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L. A. Donoghue, B.Sc., M.S.A., P.Eng.: farm buildings

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FARM CROPS

A. D. McLaren, B.S.A., M.S.A.: corn and forages production

J. D. Curtis, B.S.A., M.Sc.: beans and cereals production

FARM ECONOMICS

T. H. France, B.S.A., M.S.A.: production economics

HORTICULTURE AND BIOLOGY

R. H. Brown, B.S.A., M.Sc.: chemical pesticide control

K. J. Mindreboe, Cand. Agr.: chemical pesticide control

LIVESTOCK

J. A. MacDonald, B.S.A., M.S.A.: nutritional studies—beef and dairy cattle

J. W. Underwood, B.S.A.: nutritional studies—swine and beef cattle

POULTRY

D. G. Luckham, B.S.A., M.S.A.: nutrition and management

SOILS

C. S. Baldwin, B.S.A., M.S.A., Ph.D.: soil fertility

C. K. Stevenson, B.S.A., M.Sc.: soil fertility

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M. D. Meagher, B.Sc.F., M.Sc.F., R.P.F., *Lecturer*: dendrology

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- J. R. Ingalls, B.S., M.S., Ph.D., *Assistant Professor*: ruminant nutrition
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CANADA

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B. D. Owen, B.Sc.A., M.Sc., Ph.D., *Associate Professor of Animal Science: animal nutrition*
C. M. Williams, B.S.A., M.Sc., Ph.D., *Professor and Senior Extension Specialist in Animal Science: physiology of growth*

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CANADA

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 T. D. D. Groves, B.S.A., M.S.A., Ph.D., *Assistant Professor of Animal Physiology*: animal physiology
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 A. R. Robblee, B.Sc., M.Sc., Ph.D., *Professor of Poultry Husbandry*: poultry nutrition

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 F. W. Wood, M.Sc., *Associate Professor of Dairy and Food Science*: dairy and food processing

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 J. Sharplin, B.Sc., Ph.D., *Assistant Professor of Entomology*: morphology

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- L. P. V. Johnson, B.Sc., M.Sc., Ph.D., *Professor of Genetics and Plant Breeding*: quantitative genetics
 K. Lesins, B.Agr., D.Sc., *Associate Professor of Genetics*: genetics and plant breeding
 W. E. Smith, B.Sc., M.Sc., Ph.D., *Associate Professor of Genetics and Plant Breeding*: genetics and breeding of flax, management of field crops

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 W. T. Andrew, B.Sc., M.Sc., Ph.D., *Associate Professor of Horticulture*: vegetable crops
 A. W. Bailey, B.S.A., M.S., *Assistant Professor of Crop Ecology*: plant ecology
 N. Colotelo, B.Sc., M.Sc., Ph.D., *Assistant Professor of Plant Science*: host/parasite relationships
 R. H. Knowles, B.S.A., M.Sc., *Associate Professor of Horticulture*: landscape architecture, turf and woody ornamentals
 W. P. Skoropad, M.Sc., Ph.D., *Associate Professor of Plant Pathology*: plant diseases
 M. Spencer, B.A., M.A., Ph.D., *Professor of Plant Science and Biochemistry*: plant biochemistry
 E. W. Toop, B.S.A., M.Sc., Ph.D., *Assistant Professor of Horticulture*: floriculture
 W. H. Vanden Born, B.Sc., M.Sc., Ph.D., *Associate Professor of Plant Science*: herbicides and weed physiology

CANADA

S. Zalik, B.S.A., M.Sc., Ph.D., *Professor of Plant Science*: plant physiology and morphogenesis, cereal chemistry

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 L. Valg, B.S.F., M.F., *Assistant Professor*: forest products, linear programming
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 J. W. Wilson, M.S., Ph.D., *Professor*: wood chemistry, fibre technology

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T. Nay: development of skin and hair (cattle; mice and sheep)
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(ii) *Gilruth Plains*

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(iii) *McMaster Field Station*

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J. E. Vercoe, M.Agr.Sc., Ph.D.: nutrition and metabolism

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G. S. Cottew, M.Sc.: serology of mycoplasmas

J. H. Dufty, B.V.Sc., M.R.C.V.S.: bovine infertility

E. L. French, M.Sc., Ph.D.: virology and immunology

J. R. Hudson, B.Sc., M.R.C.V.S.: bovine pleuropneumonia; microbiology

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G. W. Lanigan, M.Sc.: ruminant degradation of pyrrolizidine alkaloids

L. C. Lloyd, B.V.Sc., Ph.D.: pathogenesis of pleuropneumonia

Miss M. Monsborough, B.Sc.: bovine infertility

I. M. Parsonson, B.V.Sc.: ovine footrot

J. E. Peterson, B.V.Sc.: histopathology and electron microscopy

P. Plackett, B.A., Ph.D.: mycoplasma lipids

A. W. Rodwell, M.Sc., Ph.D.: nutrition and metabolism of mycoplasmas

T. D. St. George, B.V.Sc.: virology

Miss G. Slack, B.Sc.Hons.: virus biophysics

W. A. Snowdon, B.V.Sc.: virology and immunology

(iii) *McMaster Laboratory*

Parramatta Road, Glebe, N.S.W. (Private Bag No. 1, P.O. Glebe, N.S.W.)
Tel.: 68 4411. Cables: Masterlab, Sydney

D. F. Stewart, D.V.Sc., Dip.Bact., *Associate Chief of Division*

J. C. Boray, D.V.M.: fluke diseases

J. K. Dineen, B.Sc., Ph.D.: immunology

A. D. Donald, B.V.Sc., Ph.D.: helminthology (larval ecology)

A. L. Dyce, B.Sc.Agr.Hons.: external parasites

J. R. Egerton, B.V.Sc., Dip.Bact.: ovine footrot

H. McL. Gordon, B.V.Sc.: parasitology; epidemiology

B. S. Goodrich, B.Sc.Hons.: phalaris toxicity; organic chemistry

N. P. H. Graham, B.V.Sc.: foot conditions of sheep and mycotic dermatitis

F. A. Happich, D.V.M.: fluke diseases

W. O. Jones, B.Sc.: pathological and physiological disturbances due to parasites

Miss J. H. Koch, M.D.: mechanism of acute phalaris toxicity

M. D. Murray, B.Sc.Vet.Sc., F.R.C.V.S.: external parasites

J. T. McL. Neilson, B.Sc., Ph.D.: parasite physiology

Mrs. J. Paterson, B.Sc.: fluke diseases

D. S. Roberts, M.V.Sc., Ph.D.: mycotic dermatitis and foot abscess

L. E. A. Symons, M.Sc., B.V.Sc.: pathological and physiological disturbances due to parasitism

B. M. Wagland, B.Sc.: immunology

Mrs. J. Yuen, B.Sc.: phalaris toxicity; biochemistry

(iv) *Veterinary Parasitology Laboratory*

677 Fairfield Road, Yeerongpilly, Queensland. Tel.: 48 2581. Cables:
Alresearch, Brisbane

Vacant: *Officer-in-Charge*

K. C. Bremner, M.Sc., Ph.D.: pathogenesis of helminth diseases in cattle

- P. H. Durie, M.Sc.: gastro-intestinal helminths of cattle
- P. Elek, LL.D. (Pecs.), B.V.Sc.: histopathology of helminthiasis
- R. K. Keith, Dip.Ind.Chem.: bovine helminthiasis
- D. F. Mahoney, B.V.Sc.: bovine babesiosis
- J. A. Roberts, B.V.Sc., Ph.D.: immunology of babesia organisms
- R. Winks, B.V.Sc.: epidemiology of bovine helminthiasis

(v) *Pastoral Research Laboratory*

King Street, Townsville, Queensland. (Private Bag, Townsville, Queensland).
Tel.: 3 173 Cables: Coresearch, Townsville

- L. A. Y. Johnston, B.V.Sc.: epidemiology of bovine babesiosis

(c) DIVISION OF ANIMAL PHYSIOLOGY

Ian Clunies Ross Animal Research Laboratory, Great Western Highway,
Prospect, N.S.W. (P.O. Box 144, Parramatta, N.S.W.) Tel.: 631-8022
(Sydney). Cables: Rosslab, Sydney

- I. W. McDonald, B.V.Sc., B.Sc., Ph.D., *Chief of Division*: digestion and nitrogen metabolism of ruminants
- G. Alexander, D.Agr.Sc.: physiology of foetal and neonatal lambs
- J. M. Bassett, B.Sc.Hons., Ph.D.: endocrine control of metabolism
- A. W. H. Braden, M.Sc., Ph.D.: physiology of reproduction
- P. K. Briggs, B.Sc.Agr.Hons., Ph.D.: physiology of undernutrition of sheep
- A. H. Brook, B.V.Sc., H.D.A.: neuro-endocrinology of renal function
- G. D. Brown, B.Sc., Ph.D.: climate physiology
- R. E. Chapman, B.Sc., M.Sc.: abnormalities of wool growth
- A. M. Downes, M.Sc.: amino acid synthesis in sheep
- K. A. Ferguson, B.V.Sc., Ph.D.: endocrinology
- N. McC. Graham, B.Sc.Hons., B.Agr., Ph.D.: energy metabolism of sheep
- J. A. Hemsley, B.Sc.Agr., Ph.D.: nitrogen utilization of sheep
- J. P. Hogan, B.Sc.Agr.Hons., Ph.D.: digestion and metabolism in grazing sheep
- J. C. D. Hutchinson, M.A.: climate physiology
- A. G. Lyne, B.Sc., Ph.D.: structure and development of skin and hair follicles
- G. R. Moule, D.V.Sc.: sheep ecology
- B. A. Panaretto, B.V.Sc., Ph.D.: metabolic failure of animals under stress
- H. M. Radford, B.Sc.: neuro-endocrinology of reproduction
- P. J. Reis, B.Sc.Agr.Hons.: nitrogen metabolism and wool growth
- T. W. Scott, B.Sc.Agr., Ph.D.: lipid metabolism
- B. P. Setchell, B.V.Sc., Ph.D.: blood flow and metabolism in reproductive organs
- B. F. Short, M.Agr.Sc.Hons., Ph.D.: biology of wool follicles
- B. D. Stacy, B.Sc.Hons., Ph.D.: renal physiology
- A. L. C. Wallace, B.Sc.: metabolic effects of pituitary hormones
- A. C. I. Warner, B.Sc., Dip.Microbiol., Ph.D.: microbiology of the rumen
- R. H. Weston, B.Sc.Agr.Hons., M.S.: ruminant nutrition
- O. B. Williams, M.Agr.Sc.: pasture ecosystems

(i) *Pastoral Research Laboratory*

University of New England, Armidale, N.S.W. (Private Bag, Armidale,
N.S.W.) Tel.: 2454 (Armidale). Cables: Coresearch, Armidale

- W. M. Willoughby, B.Sc.Agr., *Officer-in-Charge*: pasture ecology
- J. L. Corbett, B.Sc.Agr., M.Sc.Agr.Hons.: energy metabolism of grazing sheep
- E. J. Hilder, B.Sc.Agr.: nutrient cycles
- K. J. Hutchinson, M.Sc.Agr.: pasture utilization
- J. P. Langlands, B.Sc.Agr.Hons., Ph.D., M.D.A.: intake of grazing sheep
- J. J. Lynch, B.V.Sc., Ph.D.: animal ecology
- T. F. Reardon, M.Sc.Agr.: nutritional biochemistry

COMMONWEALTH OF AUSTRALIA

W. H. Southcott, B.V.Sc.: ecology of sheep parasites
J. L. Wheeler, B.Sc.Agr., Ph.D.: pasture ecology

(ii) *Beef Cattle Research Unit*

Cunningham Laboratory, Mill Road, St. Lucia, S.W.6., Queensland. Tel.: 73121 (Brisbane). Cables: Coresearch, Brisbane

L. Donaldson, B.V.Sc., M.V.Sc., Ph.D.: physiology of reproduction
M. C. Franklin, M.Sc.Hons., Ph.D.: animal nutrition
L. J. Lambourne, B.Sc., M.Sc.Hons., Ph.D.: ruminant nutrition
D. R. Lamond, B.V.Sc., M.Agr.Sc., Ph.D.: physiology of reproduction
D. A. Little, M.V.Sc.: animal nutrition

(iii) *Attached to D.S.I.R., Plant Chemistry Division, Palmerston North, New Zealand*

R. H. Laby, B.Sc., M.Sc., Ph.D.: physical chemistry of the rumen

(d) DIVISION OF NUTRITIONAL BIOCHEMISTRY

Kintore Avenue, Adelaide, S. Aust. Tel.: 23 5511. Cables: Nutrition, Adelaide

A. T. Dick, O.B.E., D.Sc., F.A.A., F.R.A.C.I., *Chief of Division*: mineral nutrition, toxic plants

Miss S. H. Allen, B.Sc., A.R.A.C.I.: biochemistry of intermediary metabolic pathways

W. W. Forrest, B.Sc., Ph.D.: micro-calorimetry of isolated rumen organisms

J. L. Frahn, M.Sc., Ph.D.: carbohydrate chemistry

K. O. Godwin, B.Sc., Ph.D.: role of selenium in nutrition

F. V. Gray, M.Sc.: rumen physiology, microbiology

E. G. Holmes, M.A., M.D., M.R.C.P.: water metabolism

I. G. Jarrett, M.Sc., A.R.A.C.I.: ruminant physiology

G. B. Jones, M.Sc., A.R.I.C., A.R.A.C.I.: chemical analyses

R. E. Kuchel, B.Sc., R.D.A.: mineral nutrition

H. J. Lee, M.Sc.: mineral nutrition

J. A. Mills, M.Sc., Ph.D.: carbohydrate chemistry

A. W. Peirce, D.Sc., F.R.A.C.I.: salt tolerance of sheep

A. F. Pilgrim, B.Sc.: rumen physiology, microbiology

B. J. Potter, M.Sc., A.R.A.C.I.: ruminant physiology

D. S. Riceman, D.Sc., B.Agr.Sc., R.D.A.: plant nutrition

R. M. Smith, M.Sc.: biochemistry of intermediary metabolism of ruminants

D. J. Walker, B.Sc., Ph.D.: microbiology of isolated rumen organisms

R. A. Weller, B.Sc., A.R.A.C.I.: rumen physiology, microbiology

3. Division of Dairy Research

Graham Road, Highett, S.21, Vic. Tel.: 95 0331. Cables: Coresearch, Melbourne

G. Loftus Hills, B.Agr.Sc., *Chief of Division*

R. Beeby, A.R.M.T.C.: milk proteins

R. A. Buchanan, B.Agr.Sc., M.Sc.: new food forms

J. Conochie, B.Sc.Agr.: packaging of dairy products

J. Czulak, B.Sc.Agr.: cheese, mechanization of manufacture

D. A. Forss, M.Sc.: flavour chemistry

R. D. Hill, B.Sc., B.Com.: milk proteins

Miss B. M. P. Keogh, M.Sc.: bacteriology of cheese

N. King, M.Sc.: micro-structure

L. L. Muller, B.Sc.: casein and recombined products manufacture

E. G. Pont, M.Sc.Agr.: market milk and cream, oxidation defects

E. G. Ramshaw, M.A., Ph.D.: flavour chemistry

N. S. Snow, M.Sc.Agr., Ph.D.: milk proteins

4. Division of Entomology

Black Mountain, via City, Canberra, A.C.T. (P.O. Box 109, City, Canberra, A.C.T.) Tel.: 4 0455. Cables: Coresearch, Canberra. Teleprinter: 62003.

- D. F. Waterhouse, D.Sc., F.A.A., *Chief of Division*: insect physiology, digestion
 K. R. Norris, M.Sc., *Assistant Chief*: ecology of sheep blowfly
 F. N. Ratcliffe, O.B.E., B.A., *Assistant Chief*: ecology, biological control
 S. W. Bailey, B.Sc., A.R.C.S.: pests of stored products
 L. B. Barton Browne, B.Sc., Ph.D.: sensory physiology
 G. F. Bornemissza, Ph.D.: biological control—ragwort, dung insects
 E. B. Britton, D.Sc.: taxonomy of Coleoptera
 E. McC. Callan, B.Sc., Ph.D.: biological control of insect pests and weeds
 T. G. Campbell: biological control, taxonomy of Hemiptera
 P. B. Carne, B.Agr.Sc., Ph.D.: ecology of pasture and forest insects
 D. P. Clark, B.Sc., Ph.D.: ecology of grasshoppers
 L. R. Clark, M.Sc.: field population studies
 D. H. Colless, B.Sc.Agr., Ph.D.: taxonomy of Diptera
 I. F. B. Common, M.A., M.Agr.Sc.: taxonomy of Lepidoptera
 F. J. Gay, B.Sc., D.I.C.: termites and forest insects
 P. W. Geier, B.Sc.Agr., Ph.D.: ecology of orchard pests
 A. R. Gilby, M.Sc., Ph.D.: insect physiology, surface chemistry
 T. D. C. Grace, B.Sc., Ph.D.: insects and viruses, tissue culture
 T. Greaves: ants and termites
 R. H. Hackman, M.Sc., Ph.D.: insect physiology, cuticle chemistry
 R. W. Kerr, B.Sc.: insecticides
 K. H. L. Key, Ph.D., D.Sc., D.I.C., F.A.A., *Curator of Insect Collection*: taxonomy of Acridoidea
 I. M. Mackerras, B.Sc., M.B., Ch.M., F.R.A.C.P., F.A.A., *Editor of "Insects of Australia" and Research Fellow*: taxonomy of Diptera
 B. P. Moore, B.Sc., Ph.D., D.Ph.: chemistry of insect hormones
 A. J. Nicholson, C.B.E., D.Sc., F.A.A., *Research Fellow*: population dynamics
 S. J. Paramonov, D.Sc., *Research Fellow*: taxonomy of Diptera
 R. F. Powning, M.Sc., A.S.T.C.: insect physiology, wool digestion
 E. F. Riek, M.Sc.: taxonomy of Hymenoptera

(a) AT BIOLOGICAL CONTROL STATION, Sydney

Botanic Gardens, Mrs. Macquarie's Road, Sydney, N.S.W. Tel.: 27 2972.
 Cables: Biocon, Sydney

G. J. Snowball, B.Sc.: biological control of fruit fly

(b) AT FIELD STATION, Albury, N.S.W.

P.O. Box 143, Albury, N.S.W. Tel.: 1744. Cables: Coresearch, Albury

J. L. Readshaw, B.Sc., Ph.D.: ecology of Phasmatidae

(c) AT PASTORAL RESEARCH LABORATORY, Armidale, N.S.W.

University of New England, Armidale, N.S.W. (C.S.I.R.O., Private Mail Bag, Armidale, N.S.W.) Tel.: 2454, 2455 (Armidale). Cables: Coresearch, Armidale

R. J. Roberts, B.A., M.Sc., Ph.D.: biology, ecology and behaviour of pasture insects

(d) AT PASTURE RESEARCH STATION, Samford, Q'ld.

Old Cedar Creek Road, Samford, Queensland. Tel.: 891/241. Cables: Alresearch, Brisbane

A. J. Wapshire, B.Sc., Ph.D.: biological control of weeds

COMMONWEALTH OF AUSTRALIA

- (e) AT SILWOOD PARK, Berks., England
Sirex Biological Control Unit, Silwood Park, Sunninghill, Ascot, Berks., England
F. Wilson, F.I.Biol.: biological control of insect pests and weeds
- (f) AT TASMANIAN REGIONAL LABORATORY, Hobart
"Stowell", Stowell Avenue, Hobart, Tasmania. Tel.: 2 2786, 2 2787. Cables: Coresearch, Hobart
J. L. Madden, B.Agr.Sc., M.Sc., Ph.D.: ecology and behaviour of *Sirex*
K. L. Taylor, B.Sc.Agr.: ecology and behaviour of *Sirex*
- (g) AT VETERINARY PARASITOLOGY LABORATORY, Brisbane
677 Fairfield Road, Yeerongpilly, Brisbane, Q'ld. Tel.: Brisbane 48 2581.
Cables: Alresearch, Brisbane
W. J. Roulston, M.Sc.: cattle tick insecticides
R. J. Tatchell, B.Sc., Ph.D.: cattle tick physiology
R. H. Wharton, M.Sc., Ph.D.: tick resistance in cattle, cattle tick ecology
- (h) AT WESTERN AUSTRALIAN REGIONAL LABORATORY, Nedlands
University Grounds, Nedlands, W. Aust. Tel.: Perth 86 2451. Cables: Coresearch, Perth
M. M. H. Wallace, B.Sc.: earth mite, lucerne flea, Jarrah leaf miner investigations
- (i) AT ZOOLOGY DEPARTMENT, UNIVERSITY OF SYDNEY
Sydney, N.S.W. Tel.: 68 0522. Cables: Coresearch, Sydney
M. A. Bateman, B.Sc., Ph.D.: ecology of Queensland fruit fly
D. Gilmour, D.Sc.: chemosterilants
G. Pritchard, B.Sc., Ph.D.: physiology and behaviour of fruit fly

5. Division of Food Preservation

- (a) DIVISIONAL HEADQUARTERS
Delhi Road, North Ryde, N.S.W. (P.O. Box 43, Ryde, N.S.W.) Tel.: Sydney 88 0233. Cables: Foodpres, Sydney
J. R. Vickery, M.Sc., Ph.D., *Chief of Division*: cyclopropanoid chemistry, effects on lipid metabolism of hens, storage of eggs
W. J. Scott, B.Agr.Sc., D.Sc., *Assistant Chief of Division*: microbiology of foods, meat science and technology
J. F. Kefford, M.Sc., *in charge Food Technology Section*
R. B. Withers, M.Sc., Dip.Ed., *Technical Secretary*
E. F. L. J. Anet, M.Sc., Ph.D.: chemistry of carbohydrates
Miss J. M. Bain, M.Sc., Ph.D.: electron microscopy
P. W. Board, B.Sc.Hons.: canning technology; corrosion of tinplate
R. W. Burley, M.Sc., Ph.D.: physical chemistry of proteins of muscle and egg yolk
D. J. Casimir, M.Sc., Dip.Ed.: food processing equipment
B. V. Chandler, B.Sc.Hons., Ph.D.: chemistry of fruits and vegetables, especially citrus
J. H. B. Christian, B.Sc.Agr.Hons., Ph.D.: water requirements and salt tolerance of micro-organisms
J. B. Davenport, M.Sc.: chemistry of phospholipids; muscle structure
E. G. Davis, B.Sc.Hons.: packaging of foods
E. G. Hall, B.Sc.Agr.Hons.: storage and transport of fruits and vegetables
F. E. Huelin, B.Sc.Hons., Ph.D.: chemical changes in fruits during storage

COMMONWEALTH OF AUSTRALIA

- D. L. Ingles, M.Sc., Ph.D.: chemistry of carbohydrates
A. R. Johnson, B.Sc.Hons., Ph.D.: cyclopropenoid chemistry, effects on lipid metabolism of hens
D. McG. McBean, B.Sc.: dehydration of fruits and vegetables
W. B. McGlasson, B.Agr.Sc.Hons., Ph.D.: post-harvest physiology of fruits and vegetables
J. Middlehurst, M.Sc.: sorption isotherms, water diffusion
R. S. Mitchell, M.Sc.Agr.: canning crops, texture investigations
K. E. Murray, D.Sc.: chemistry of volatile flavours; physical methods of analysis
W. G. Murrell, B.Sc.Agr., D.Phil.: bacterial spores
O. Myklestad, B.Chem.Eng., Sc.D.: heat and mass transfer; drying of grain
R. P. Newbold, M.Sc., Ph.D.: biochemistry of muscle
J. K. Palmer, M.S., Ph.D.: enzymes and volatiles of fruits
N. S. Parker, B.Sc., Ph.D.: rheology of foods
Miss T. M. Reynolds, M.Sc., D.Phil.: chemistry of carbohydrates
J. Shipton, B.Sc.Agr.: freezing of fruits and vegetables
G. S. Sidhu, B.Sc.Agr., Ph.D.: preservation of fish
M. B. Smith, A.S.A.S.M., M.Sc.: chemistry of egg proteins
F. B. Whitfield, M.Sc., Ph.D., A.S.T.C.: flavour components of frozen foods
- (b) AT SCHOOL OF BIOLOGICAL SCIENCES, UNIVERSITY OF SYDNEY
Sydney, N.S.W. Tel.: 68 2223
R. M. Smillie, M.Sc., Ph.D., *Officer-in-Charge*: photosynthesis; differentiation; senescence
C. J. Brady, M.Sc.Agr., Ph.D.: amino acid metabolism of aging leaves
J. Giovanelli, B.Sc.Agr., Ph.D.: metabolism of organic acids
D. Graham, B.Sc.Hons., Ph.D.: photosynthesis and differentiation
N. Scott, B.Agr.Sc.Hons.: differentiation of photosynthetic cells
- (c) AT DIVISION OF ANIMAL PHYSIOLOGY
Great Western Highway, Prospect, N.S.W.
W. R. Shorthose, B.Sc.Hons., Ph.D.: effects of stress in ruminants on quality of meat
- (d) AT ATOMIC ENERGY RESEARCH ESTABLISHMENT
Lucas Heights, N.S.W. (Private Bag, Post Office, Sutherland, N.S.W.) Tel.: Sydney 531 0111
J. J. Macfarlane, M.Sc.: irradiation of foods
- (e) AT BRISBANE ABATTOIR
P.O. Box 12, Cannon Hill, E.4, Queensland. Tel.: Brisbane 95 4006. Cables: Foodpres, Brisbane
A. Howard, M.Sc., *Officer-in-Charge*: cold storage of meat
F. Grau, B.Sc.Hons., M.S., Ph.D.: physiology of meat spoilage micro-organisms
G. Kaess, Dr.Ing.: preservation of meat
- (f) AT TASMANIAN REGIONAL LABORATORY
"Stowell", Stowell Avenue, Hobart, Tas. (Private Bag, P.O., Hobart)
Tel.: 2 2786, 2 2787. Cables: Coresearch, Hobart
S. M. Sykes, B.Sc.Agr., M.Sc.: preservation of fruits and vegetables
D. G. James, B.Sc.: preservation of fish

COMMONWEALTH OF AUSTRALIA

6. Division of Forest Products

69 Yarra Bank Road, South Melbourne, S.C.4, Vic. Tel.: Melbourne 69 5831. Cables: Forestproducts, Melbourne

R. W. Muncey, M.E.E., *Chief*

F. A. Priest, A.S.A.S.M., *Technical Secretary*

A. P. Wymond, M.Sc., *Information Officer*

(a) PLYWOOD AND GLUING

J. W. Gottstein, B.Sc., *Section Leader*: plywood and adhesives

K. F. Plomley, B.Sc.Agr.: chemistry and use of adhesives

(b) PHYSICS

R. S. T. Kingston, B.Sc., B.E., *Section Leader*: rheology of wood

G. N. Christensen, M.Sc., Ph.D.: wood-liquid relations

L. N. Clarke, M.Mech.E., B.Eng.Sc.: instrumentation, thermal and electrical properties

P. U. A. Grossman, Ph.A.Mr., M.Sc., Ph.D.: rheology of wood

(c) SPECIAL INVESTIGATIONS

W. E. Cohen, D.Sc.: dimensional stabilization of wood and paper

(d) TIMBER MECHANICS

J. D. Boyd, M.C.E., *Section Leader*: timber engineering

N. H. Kloot, M.Sc.: timber mechanics

R. G. Pearson, B.A., B.C.E.: timber engineering

(e) TIMBER PRESERVATION

N. Tamblyn, M.Sc.Agr., *Section Leader*: wood preservation economics, mycology

E. W. B. DaCosta, M.Agr.Sc.: timber mycology, physiology of basidiomycetes

R. Johanson, M.Sc.: chemistry of wood preservatives

P. Rudman, B.Sc., Ph.D., Dip.Microbiol.: biochemistry, penetration of preservatives

(f) TIMBER SEASONING

G. W. Wright, M.E., *Section Leader*: seasoning practice, kiln design, timber handling, drying economics

W. G. Kauman, B.Sc., Dr.en.Sc., A.R.M.T.C.: collapse, transfer of mass and energy through wood

(g) TIMBER UTILIZATION

W. M. McKenzie, M.Sc., Ph.D.: basic cutting research, residue utilization

(h) WOOD CHEMISTRY, PULP AND PAPER

H. G. Higgins, B.Sc., D.App.Sc., *Section Leader*: molecular structure, paper physics

Mrs. J. F. Melvin, M.Sc.: wood chemistry

A. J. Michell, B.Sc., Ph.D.: molecular structure, spectroscopy

R. C. McK. Stewart, D.Sc.: wood polysaccharides

A. J. Watson, F.R.M.I.T.: pulp and paper

(i) WOOD AND FIBRE STRUCTURE

W. E. Hillis, M.Sc., A.G.Inst.Tech., *Acting Section Leader*: cell contents, wood and bark

D. E. Bland, M.Sc.: lignin

R. C. Foster, B.Sc., Ph.D.: cell ultrastructure

H. D. Ingle, B.For.Sc.: anatomy of wood

- J. W. P. Nicholls, M.Sc.: assessment of wood quality
 G. Scurfield, B.Sc., Ph.D.: environment, reaction wood
 D. S. Skene, B.Sc., Ph.D.: wood structure

7. Horticultural Research Section

- (a) HEADQUARTERS: Hartley Grove (off Waite Road) Glen Osmond (Private Bag 1, Glen Osmond) South Australia. Tel.: 793605. Cables: Coresearch, Adelaide

- J. V. Possingham, B.Agr.Sc.Hons., M.Sc., D.Phil., *Officer-in-Charge*: physiological, morphological and nutritional studies in plants
 W. N. Arnold, B.Sc., M.A., Ph.D.: biochemistry of sugar accumulation
 A. F. Bird, M.Sc., Ph.D.: physiology, histochemistry and ultrastructures of nematodes
 D. E. Bottrill, B.Agr.Sc.Hons., Ph.D.: biochemical studies on the metabolism of inorganic nutrients in plants
 M. S. Buttrose, B.Agr.Sc.Hons., M.Sc., Dr.sc.nat.: flowering and ultrastructure studies in vines
 P. J. Hardy, B.Sc.Hons., Ph.D.: physiology of flavour and sugar accumulation in fruits
 P. May, Ing.Agr., Dr.sc.tech.: vine physiology and fruit bud initiation
 M. G. Mullins, B.Sc., Ph.D., Dip.Agr. (Cantab.): bunch development and abscission studies in vines
 K. G. M. Skene, B.Agr.Sc., Ph.D.: growth hormones in woody perennials
 H. R. Wallace, Ph.D., D.Sc.: nematode ecology and physiology

- (b) AT MERBEIN, Victoria

Tel.: Merbein South 511. Cables: Coresearch, Merbein

- D. McE. Alexander, B.Sc.: tree physiology studies
 A. J. Antcliff, B.Sc.Hons.: vine selection and breeding
 M. Grncarevic, Ing.Agr.: studies on the processing of dried fruits
 D. H. Maggs, B.Sc.Hons.: orchard ecology and tree physiology
 M. R. Sauer, B.Agr.Sc.: phytonematode studies
 R. C. Woodham, B.Agr.Sc.: vine virus and vine selection

8. Irrigation Research Laboratory

Private Mail Bag, Post Office, Griffith, N.S.W. Tel.: Griffith 1701. Cables: Coresearch, Griffith. Teleprinter: 69990

- E. R. Hoare, B.Sc.Eng., M.I.E.E., M.I.E. (Aust.), *Officer-in-Charge*: Australian irrigation
 H. D. Barrs, B.Sc., Ph.D.: plant physiology
 P. R. Cary, B.Sc.Hons.: nutritional chemist
 P. M. Fleming, B.E.Civil: spray irrigation and meteorology
 K. V. Garzoli, B.E.Mech.: environmental control and irrigation techniques
 A. H. Gunn, A.R.A.C.I.: analytical chemistry
 H. Greenway, Ir.Agr.: salinity and plant growth
 A. R. G. Lang, B.Sc., Ph.D., A.R.A.C.I.: plant water and nutrient uptake
 E. T. Linacre, M.A., M.Sc.: energy relations of irrigated crops
 A. Low, B.Sc.Agr.: cotton breeder
 F. M. Melhuish, B.Sc., Ph.D.: plant physiology
 W. A. Muirhead, B.Sc.Agr.: agronomic aspects of reclamation
 J. E. Saunt, M.Sc.: plant introduction
 E. N. S. Trickett, A.C.G.I., B.Sc.Eng.: evapotranspiration and instrumentation

COMMONWEALTH OF AUSTRALIA

9. Division of Land Research

P.O.Box 109, Canberra City, A.C.T. Tel.: Canberra 4 0455. Cables:
Coresearch, Canberra

(a) AT CANBERRA

G. A. Stewart, M.Agr.Sc., *Chief of Division*

J. R. M. Wolfe, B.Sc.Agr., M.S., *Assistant to Chief of Division*

(i) *Land Resources Group*

R. A. Perry, M.Sc., *Survey Leader*

(ii) *Ecology and Forest Botany*

R. A. Perry, M.Sc., *Group Leader*: arid zone ecology and arid and semi-arid range management

P. C. Heyligers, Ph.D.: New Guinea ecology, tropical savannahs

H. P. Miller, B.Sc.Agr.: semi-arid range improvement

K. Pajmans, Ing.Agr.: New Guinea forestry

J. C. Saunders, B.Sc.Agr.: New Guinea forest resources

R. Story, D.Sc.: tree-grass competition

R. E. Winkworth, B.Sc.Hons.: arid zone ecology and range improvement
(seconded to UNESCO)

(iii) *Geomorphology*

J. A. Mabbutt, M.A.Hons., *Leader*: climatic geomorphology with particular reference to arid lands

Mrs. M. E. Brookfield, B.A.Hons.: drainage morphometry, dune pattern analyses

R. W. Galloway, M.A.Hons., Ph.D.: periglacial and glacial phenomena and associated climatic history

B. P. Ruxton, M.A.: mineralogy of deep weathering of ash falls in New Guinea

J. G. Speight, M.Sc.: spectral analysis of river meanders, terrain analysis

(iv) *Pedology*

H. A. Haantjens, Ing.Agr., *Leader*: soil classification in New Guinea

P. Bleeker, geol.Drs.: soil mineralogy

R. H. Gunn, B.Sc.: pedology and land capability

A. D. L. Hooper, M.Sc.: pedology

R. M. Scott, B.Sc.: New Guinea pedology and land capability

B. G. Williams, Ph.D.: soil chemistry

(v) *Systematic Botany*

R. D. Hoogland, D.Sc., *Leader*: tropical plant taxonomy

M. Lazarides, Q.D.A.: taxonomy of grasses

R. Schodde, B.Sc.Hons.: tropical plant taxonomy

(vi) *Hydrology*

T. G. Chapman, B.Sc.Hons., Ph.D., *Leader*: field instrumentation, rainfall run-off relations, ground water dynamics

M. J. Goodspeed, B.Sc.Hons.: application of computing techniques to hydrology

K. D. Woodyer, B.Sc.Agr.: flow characteristics of streams

(vii) *Environmental Biology*

R. O. Slatyer, D.Sc.Agr., *Leader*: plant-water relationships, plant environment interactions

J. E. Begg, B.Sc.Hons., M.S., Ph.D.: photosynthetic efficiency, photo and thermo periodic relationships, leaf anatomy

G. F. Byrne, B.Sc.: physiological and micrometeorological instrumentation

COMMONWEALTH OF AUSTRALIA

E. A. Fitzpatrick, M.A.: agricultural climatology, data processing
P. C. Owen, B.Sc.Hons., Ph.D.: rice physiology
C. W. Rose, B.Sc., B.E., Ph.D.: environmental physics
W. R. Stern, M.Sc.Agr., Ph.D.: light-plant-growth relationships
R. Wetselaar, Ing.Agr.: nitrogen agronomy

(viii) *Agricultural Assessment*

J. J. Basinski, B.Sc., M.A., *Leader*: cotton and general
H. A. Nix, Q.D.A., B.Agr.Sc.: land resource evaluation

(ix) *Agronomy of Tropical Pastures and Crops*

M. J. T. Norman, B.Sc.Hons., Ph.D., *Leader*

(b) AT KATHERINE RESEARCH STATION, P.O. Box 21, Katherine, N.T.

L. J. Phillips, Q.D.D., *Officer-in-Charge*: field crop agronomy
M. J. Fisher, B.Agr.Sc.: agronomy of Townsville lucerne
I. M. W. Wood, B.Sc., B.Agr.Sc.: agronomy of peanuts

(c) AT KIMBERLEY RESEARCH STATION, Kununurra, W.A.

D. F. Beech: cereal and cotton agronomy
J. P. Evenson, M.Sc.: cotton agronomy
P. Jakobsen, B.Sc.Agr., Dip.Appl.Chem.: soil chemistry
D. H. Mackenzie, B.Agr.Sc.: pasture and sorghum agronomy
P. E. Madge, M.Sc.Agr., Ph.D.: insect ecology
P. J. van Rijn, Ing.Agr.: agronomy of weeds
D. W. Robinson, B.Sc., Ph.D.: beef cattle nutrition
N. J. P. Thomson, B.Agr.Sc., M.Sc.Agr.: cotton breeding

(d) AT COASTAL PLAINS RESEARCH STATION

P.O. Box 738, Darwin, N.T. Tel.: 2654. Cables: Coresearch, Darwin, N.T.
E. C. B. Langfield, M.B.E., Dip.W.A.T.C., *Officer-in-Charge*: plant breeding
G. R. Chaplin, B.Sc.Agr.: soil chemistry
A. L. Chapman, B.Agr.Sc.: irrigation agronomy

10. Division of Mathematical Statistics

(a) DIVISIONAL HEADQUARTERS

Kintore Avenue, Adelaide, S.Aust. Tel.: 23 5511. Cables: Nutrition, Adelaide

E. A. Cornish, B.Agr.Sc., D.Sc., F.A.A., F.A.I.A.S., *Chief of Division*
A. G. Constantine, B.Sc.Hons., Ph.D.
K. M. Cellier, B.Sc.
W. B. Hall, B.A.
G. W. Hill, M.Sc., Ph.D.
L. G. Veitch, B.Sc.
G. N. Wilkinson, B.Sc.Hons., M.Sc.

(b) AT CUNNINGHAM LABORATORY, Brisbane

St. Lucia, S.W.6, Brisbane, Q'ld. Tel.: Brisbane 7 3121. Cables: Coresearch, Brisbane

K. P. Haydock, B.Sc.Hons.

(c) AT DIVISIONS OF PLANT INDUSTRY AND ENTOMOLOGY

Black Mountain, Canberra, A.C.T. (P.O. Box 109, Canberra City, A.C.T.)
Tel.: 4 0455. Cables: Coresearch, Canberra

M. L. Dudzinski, B.Sc., B.Ec.Hons.

COMMONWEALTH OF AUSTRALIA

G. A. McIntyre, B.Sc.Hons., Dip.Ed.

N. E. G. Gilbert, B.A., Dip.Math.Stat. (Cantab.), Dip.Biophy. (Edin.)

(d) **AT DIVISION OF FOOD PRESERVATION**

P.O. Box 43, Ryde, N.S.W. Tel.: 88 0233. Cables: Foodpres, Sydney

G. G. Coote, B.A., B.Sc.

E. A. Roberts, B.Sc.Agr.

(e) **AT McMASTER LABORATORY**

Parramatta Road, Glebe, N.S.W. Tel.: 68 4411. Cables: Masterlab, Sydney

G. M. Tallis, M.Sc., Ph.D.

(f) **AT ALPHA HOUSE**

60 King Street, Newton, N.S.W. Tel.: 68 4411. Cables: Masterlab, Sydney

R. T. Leslie, B.Sc., M.A., Ph.D.

H. Weiler, Lic.ès.Sc.(Par.), M.Sc.

(g) **AT PASTORAL RESEARCH LABORATORY**

New England Highway, Armidale, N.S.W. Tel.: Armidale 2454. Cables: Coresearch, Armidale

P. F. May, B.Sc.Agr.Hons.

(h) **AT DIVISION OF BUILDING RESEARCH**

Graham Road, Highett, S.21, Vic. Tel.: Melbourne 95 1231

R. Birtwistle, B.Sc.

(i) **AT UNIVERSITY OF MELBOURNE**

School of Agriculture, Parkville, N.S., Vic.

A. M. W. Verhagen, Cand.Nat.Phil.(Utrecht), B.A.Hons., Ph.D.

(j) **AT WESTERN AUSTRALIAN REGIONAL LABORATORY**

University Grounds, Nedlands, W. Aust. Tel.: 86 2451. Cables: Coresearch, Perth

D. W. Goodall, Ph.D., D.Sc., A.R.C.S.

11. Division of Mechanical Engineering

Graham Road, Highett, S.21, Victoria. (P.O. Box 26, Highett, Victoria) Tel.: 950331 Cables: Engresearch, Melbourne

R. N. Morse, B.Sc., B.E., *Chief*

R. V. Dunkle, B.S., M.S.: solar energy, heat and mass transfer

W. B. Elder, A.G.Inst.Tech.: heat and mass transfer—wheat storage

H. J. Griffiths, B.E.E., B.Sc.: heat and mass transfer—wheat storage

F. G. Hogg, B.E.: environment control

J. J. Kowalczewski, Dipl.Ing.Dr.sc.techn.: refrigeration, heat transfer, two-phase flow

D. J. Norris, A.R.M.I.T.: solar radiation

W. R. Read, Dip.Mech.Eng.: engineering development—solar distillation—tropical air conditioning

P. A. Taylor, B.Sc.: forces acting on tillage implements

12. Division of Plant Industry

DIVISIONAL HEADQUARTERS: Black Mountain via City, Canberra, A.C.T. (P.O. Box 109, Canberra City, A.C.T.) Tel.: 4 0455. Cables: Coresearch, Canberra. Teleprinter: 62003

J. E. Falk, M.Sc., Ph.D., F.A.A., *Chief of Division*

J. B. Langridge, M.Sc., Ph.D., *Assistant Chief of Division*
 F. H. W. Morley, H.D.A., B.V.Sc., Ph.D., *Assistant Chief of Division*
 J. R. Philip, B.C.E., D.Sc., *Assistant Chief of Division*

(a) AT DIVISIONAL HEADQUARTERS
 Canberra, A.C.T.

(i) *Genetics and Plant Breeding*

R. D. Brock, M.Agr.Sc., Ph.D., *Section Chairman*: mutation plant breeding, radiation genetics, cytogenetics
 H. V. Daday, M.Sc.: genetics and breeding of lucerne, marsupial tissue culture
 R. W. Downes, M.Agr.Sc., Ph.D.: genetics and breeding of white clover and rye grass
 Sir Otto Frankel, D.Sc., D.Agr., F.A.A., F.R.S., *Senior Research Fellow*: cytogenetics
 J. B. Langridge, M.Sc., Ph.D.: molecular genetics
 B. D. H. Latter, B.Sc.Agr.Hons., Ph.D.: quantitative genetics in plant breeding
 M. A. McDowall, M.Sc., Ph.D.: molecular genetics
 J. R. McWilliam, B.Sc.For.Hons., M.F., Ph.D.: genetics, pasture plant breeding
 Miss A. Millerd, M.Sc., Ph.D.: molecular genetics
 R. N. Oram, B.Agr.Sc.Hons., Ph.D.: genetics, pasture plant breeding
 W. J. Peacock, B.Sc.Hons., Ph.D.: cytogenetics
 W. R. Scowcroft, B.Sc.Agr., Ph.D.: quantitative genetics
 D. C. Wark, M.Agr.Sc.: genetics and breeding of tobacco, disease resistance

(ii) *Plant Introduction*

C. A. Neal-Smith, B.Agr.Sc.: agronomic trials of introduced plants

(iii) *Structural Botany*

C. Barnard, D.Sc.: plant anatomy, morphology, floral histogenesis

(iv) *Systematic Botany*

Miss N. T. Burbidge, D.Sc., *Herbarium Curator*

(v) *Microbiology*

C. J. Shepherd, M.A., Ph.D., *Section Chairman*: biochemistry of host-pathogen relationships
 F. J. Bergersen, D.Sc.: nitrogen fixation, legume bacteriology
 I. A. M. Cruickshank, D.Sc.: disease reaction in plants, physiology of fungal reproduction
 W. F. Dudman, B.Sc.Hons., Ph.D.: immunology, immunochemistry with special reference to *Rhizobium*
 A. H. Gibson, B.Sc.Agr.Hons., Ph.D.: physiology of legume nodulation
 Miss K. Helms, M.Sc., Ph.D.: biology of virus infection
 F. W. Hely, M.Sc.Agr., M.S.: ecology of *Rhizobium*, legume nodulation
 A. V. Hill, M.Agr.Sc.: tobacco diseases

(vi) *Chemistry and Soil Fertility*

C. H. Williams, D.Sc., *Section Leader*: sulphur and phosphorus in plant and soil
 S. M. Bromfield, M.Agr.Sc., Ph.D.: relationship of soil microbiology to plant nutrition; phosphate metabolism
 D. J. Cosgrove, B.Sc.Hons., Ph.D.: forms of phosphorus in soil
 D. J. David, D.Sc.: spectrography of plants and soils
 J. R. Freney, M.Sc., Ph.D.: nitrogen and sulphur availability
 J. Lipsett, M.Agr.Sc.: soil nitrogen and phosphorus studies
 K. D. McLachlan, B.Sc.Agr., B.Com.: phosphorus and sulphur deficiencies
 J. R. Simpson, M.Sc., Ph.D.: nitrogen and phosphorus availability

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(vii) *Plant Nutrition*

- A. J. Anderson, D.Sc.Agr., *Section Leader*: legume nodulation and symbiotic nitrogen fixation
- D. Bouma, Ir.Agr., Ph.D.: physiological changes immediately after removal of nutritional stresses
- D. N. Munns, B.Sc.Agr.Hons., Ph.D.: factors affecting nutrient uptake and response of different plants, legumes and soil acidity
- P. J. Randall, B.Sc.Hons., Ph.D.: metabolic changes associated with deficiencies and their significance in diagnosis
- D. Spencer, B.Sc.Hons., Ph.D.: chloroplast metabolism and structure, protein and nucleic acid synthesis
- K. Spencer, B.Sc.Agr.Hons., M.S.: factors affecting the occurrence of deficiencies in pastures

(viii) *Plant Biochemistry*

- W. Bottomley, B.Sc.Hons., Ph.D., *Section Chairman*: naturally occurring antifungal compounds, plant regulatory mechanisms
- Miss J. M. Anderson, M.Sc.Hons., Ph.D.: initial stages in photosynthetic processes
- C. A. Appleby, B.Sc.Hons., Ph.D.: functions of haemoproteins in nodule nitrogen fixation
- N. K. Boardman, M.Sc., Ph.D.: structure and biochemistry of chloroplasts
- B. T. Brown, M.Sc., Ph.D.: synthesis of antifungal and herbicidal substances
- J. E. Falk, M.Sc., Ph.D., F.A.A.: chemistry and biosynthesis of porphyrins, haems and haemoproteins
- C. G. Greenham, M.Sc.: biophysics; chemical control of weeds; determination of plant injury
- J. L. Huppatz, B.Sc.Hons., Ph.D.: synthesis of antifungal and herbicidal substances
- G. F. Katekar, B.Sc.Hons., Ph.D.: synthesis of antifungal and herbicidal substances
- J. N. Phillips, M.Sc., Ph.D.: surface and colloid chemistry; physico-chemical studies of porphyrins
- R. J. Porra, B.Sc.Hons., Ph.D.: enzymatic incorporation of metals into porphyrins; biosynthesis of vitamin B₁₂
- S. W. Thorne, B.Sc.Hons.: electronic instrumentation
- P. R. Whitfeld, B.Sc.Hons., Ph.D.: nucleic acid metabolism

(ix) *Plant Physiology*

- L. T. Evans, B.Sc., M.Agr.Sc., D.Phil., *Section Chairman*: photoperiodism; photosynthesis, controlled environment investigations
- L. A. T. Ballard, M.A., M.Agr.Sc., Ph.D.: seed physiology; photoperiodism
- O. H. Caso, D.Sc.: growth regulators, morphogenesis
- J. D. Hesketh, B.Sc., M.S., Ph.D.: photosynthesis, growth analysis
- N. P. Kefford, M.Sc., Ph.D.: growth regulators; morphogenesis
- A. H. G. C. Rijken, B.Sc., Ph.D.: biochemical differentiation in germination and flowering
- I. F. Wardlaw, B.Agr.Sc., Ph.D.: climatic control of assimilation and translocation
- R. F. Williams, D.Sc.: growth and differentiation; crop physiology
- J. A. Zwar, M.Agr.Sc., Ph.D.: growth regulators and morphogenesis

(x) *Agricultural Physics*

- J. R. Philip, B.C.E., D.Sc., *Section Head*: transfer of heat, water and soluble salts in soil, diffusion, micrometeorology
- E. F. Bradley, B.Sc.Hons., Ph.D.: micrometeorology, field data processing

- O. T. Denmead, B.Agr.Sc.Hons., Ph.D.: light-carbon dioxide interactions in plant growth, water availability and evapotranspiration
 A. J. Peck, B.Sc.Hons., Ph.D.: transfer processes in soils and porous media
 T. Talsma, Ir.Agr., Ph.D.: field studies of soil water
 J. Warren Wilson, M.A., D.Phil.: methods in ecology, productivity of vegetation
 R. A. Wooding, M.Sc., Ph.D.: hydrology and fluid mechanics

(xi) *Ecology*

- C. W. E. Moore, M.Agr.Sc., *Section Chairman*: environmental relations of natural communities and effects of grazing in arid and semi-arid regions
 W. D. Andrew, M.Agr.Sc.: establishment and distribution of *Medicago* spp.
 E. F. Biddiscombe, M.Sc.Agr.: microclimate and plant growth
 A. B. Costin, D.Sc.Agr.: hydrology, water relations of plant communities
 H. Doing, M.Agr.Sc., Ph.D.: phytosociology of native and exotic communities, autecology of *Carduus nutans*
 P. W. Michael, B.Agr.Sc.Hons., Ph.D.: competition between pasture and weed species
 L. F. Myers, M.Agr.Sc.: evaluation of pasture species; management systems—site productivity

(xii) *Grassland Agronomy*

- M. Freer, B.Agr.Sc.Hons., Ph.D., *Section Chairman*: ruminant physiology and nutrition
 J. B. Coombe, M.Agr.Sc., Ph.D.: ruminant physiology and nutrition
 J. L. Davidson, M.Agr.Sc., Ph.D.: pasture growth in relation to defoliation
 F. H. W. Morley, H.D.A., B.V.Sc., Ph.D.: pasture improvement and management, plant breeding
 R. W. Snaydon, B.Agr.Sc.Hons., Ph.D.: ecological evaluation of herbage species

(xiii) *Controlled Environment Research Laboratories*

- L. T. Evans, B.Sc., M.Agr.Sc., D.Phil., *Officer-in-Charge*: photosynthesis, controlled environment investigations

(xiv) *Electron Microscope Unit*

- D. J. Goodchild, B.Sc.Agr.Hons., M.A., Ph.D.: structure of viruses, nuclear proteins and other large macromolecules

(xv) *The Baas Becking Geobiological Laboratory*

At Bureau of Mineral Resources, Parkes Way, Parkes, A.C.T. Tel.: 4 9911

- P. A. Trudinger, B.Sc.Hons., Ph.D., *Principal Biologist*: sulphur metabolism of micro-organisms, mechanisms of heavy metal tolerance and sensitivity in micro-organisms
 W. R. Saddler, M.Sc., Ph.D.: microbial biochemistry

(b) AT RIVERINA LABORATORY, Deniliquin

Charlotte Street, Deniliquin, N.S.W. Tel.: Deniliquin 331. Cables: Coresearch, Deniliquin

- C. R. Kleinig, M.Agr.Sc.Hons.: pasture nutrition, fertility changes under irrigated pastures
 J. H. Leigh, B.Sc.Hons., Ph.D.: ecology of semi-arid vegetation under grazing
 A. J. Rixon, B.Sc.Agr., Ph.D.: relationship between organic matter and nutrient availability under irrigated pastures
 R. H. Sedgley, M.Agr.Sc.: soil physics, pasture establishment and maintenance on sodic clays
 A. D. Wilson, B.Agr.Sc.Hons., Ph.D.: pasture utilization, animal production on dryland and irrigated pastures

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(c) AT WESTERN AUSTRALIAN REGIONAL LABORATORY

Private Bag, P.O., Nedlands, W.Aust. Tel.: WM 2451 (Perth). Cables: Coresearch, Perth

G. W. Arnold, M.Sc.Agr., Ph.D., *Officer-in-Charge*: animal behaviour and selective grazing; pasture intake studies; grazing management

E. T. Bailey, M.Sc.: plant introduction

N. J. Barrow, M.Agr.Sc., Ph.D.: plant nutrition, efficiency of fertilizers

A. B. Beck, D.Sc.: biochemistry and bioassay of oestrogens of subterranean clover

E. A. N. Greenwood, D.D.A., B.Agr.Sc., Ph.D.: nitrogen nutrition of pastures

A. W. Humphries, B.Sc.Agr.Hons.: ecology, perennial grasses in a Mediterranean environment

H. Lloyd Davies, B.Sc.Agr.Hons.: pasture utilization, bioassay of oestrogenic pastures

P. G. Ozanne, B.Sc.Agr.: nutrient availability of deep sands

F. J. Roberts, B.Sc.Agr.Hons.: plant-soil-water relations on deep sands

R. C. Rossiter, B.Sc.Agr., D.Sc.Agr.: ecology, physiology of clover spp., oestrogens of subterranean clover

(d) AT TOBACCO RESEARCH INSTITUTE

Box 172, Mareeba, Queensland. Tel.: Mareeba 304. Cables: Coresearch, Mareeba

W. J. Lovett, M.Agr.Sc., *Officer-in-Charge*: agronomy, nitrogen nutrition and chloride uptake

J. M. Hopkinson, B.Agr.Sc.Hons., Ph.D.: water relations, photosynthesis, translocation

P. K. Macnicol, M.Sc., Ph.D.: oxidative enzymes and senescence of the tobacco leaf

(e) AT TASMANIAN REGIONAL LABORATORY

"Stowell", Stowell Avenue, Hobart, Tas. Tel.: 2 2786, 2 2787 (Hobart.) Cables: Coresearch, Hobart

D. Martin, D.Sc., *Officer-in-Charge*: pre- and post-harvest physiology in relation to storage problems

T. L. Lewis, M.Sc., Ph.D.: nutrition in relation to storage disorders

(f) AT PASTORAL RESEARCH LABORATORY

Private Mail Bag, Armidale, N.S.W. Tel.: Uralla 193, 200, 201. Cables: Coresearch, Armidale

R. L. Davidson, B.Sc.Hons., Ph.D.: ecology of pasture insects; interrelationships of pasture environments and insect numbers

(g) AT WAGGA AGRICULTURAL RESEARCH INSTITUTE

Wagga Wagga, N.S.W. Tel.: Wagga 3955

K. Hoen, M.Sc., Ph.D.: genetics, pasture plant breeding

(h) AT CUNNINGHAM LABORATORY

Mill Road, St. Lucia, S.W.6. Brisbane, Queensland. Tel.: 7 3121 (Brisbane). Cables: Coresearch, Brisbane

R. J. Williams, M.Sc.: plant introduction, plant geography, adaptive variation

(i) AT PASTORAL RESEARCH LABORATORY

Private Bag, Townsville, Queensland. Tel.: 3 173 (Townsville). Cables: Coresearch, Townsville

R. L. Burt, B.Sc.Hons., Ph.D.: pasture physiology

- (j) AT UNIVERSITY OF QUEENSLAND
C/- Parliament House, P.O., Brisbane, Queensland. Tel.: B 2501 (Brisbane)
L. J. Webb, M.Sc.Hons., Ph.D.: rain forest ecology, phytosociology
- (k) AT UNIVERSITY OF MELBOURNE
School of Agriculture, University of Melbourne, Parkville, N.2. Vic. Tel.:
34 6872 (Melbourne)
L. H. P. Jones, B.Agr.Sc., Ph.D.: soil and plant chemistry; chemistry of silicon
in the soil-plant-animal cycle

13. Soil Mechanics Section

Kinnoull Grove, off Coleman Parade, Syndal, Vic. (P.O. Box 54, Mt. Waverley,
Vic.) Tel.: 232 6111. Cables: Coresearch, Melbourne

G. D. Aitchison, M.E., Ph.D., *Officer-in-Charge*
J. D. Dover, A.S.T.C., *Scientific Assistant to Officer-in-Charge*
K. Grant, B.Sc.Hons.: terrain studies for regional development
D. Lafeber, D.Sc.: quantitative definition of soil fabric
B. G. Richards, B.E.Hons.: moisture equilibria in soils

14. Division of Soils

(a) DIVISIONAL HEADQUARTERS

Waite Road, Glen Osmond, S. Aust. (Private Mail Bag No. 1, Glen Osmond,
S. Aust.) Tel.: 79 3605. Cables: Coresearch, Adelaide

E. G. Hallsworth, D.Sc., A.R.I.C., *Chief of Division*
T. J. Marshall, M.Agr.Sc., Ph.D., *Assistant Chief*

(i) *Soil Chemistry*

E. G. Hallsworth, D.Sc., A.R.I.C.: soil chemistry; trace elements in legume
nutrition
A. W. Fordham, M.Sc., D.Phil.: chemistry of iron in soils
M. Raupach, M.Sc.: losses of phosphate in soils; reactions of silica; infra red
spectra; pine tree nutrition
H. C. T. Stace, M.Sc.: pedo-genesis; measurement of surface area
K. G. Tiller, M.Sc., Ph.D.: heavy metals as micro-nutrients in soils; clay
breakdown; geochemistry
B. M. Tucker, B.A., M.Sc.: chemical reactions of soil clays; decomposition of
illites

(ii) *Soil Physics*

T. J. Marshall, M.Agr.Sc., Ph.D.: soil water relations
J. S. Colville, M.Sc.: soil water relations
W. W. Emerson, B.A., Ph.D.: soil structure
D. A. Farrell, B.C.E., Ph.D.: soil tillage; soil water relations
E. L. Greacen, B.Sc.Agr., Ph.D.: soil tillage; soil structure
C. G. Gurr, B.Sc.: soil water relations
J. W. Holmes, M.Sc.: soil water relations, evaporation

(iii) *Soil Microbiology*

R. J. Swaby, M.Sc., M.Agr.Sc., Ph.D.: soil organic matter and exudation of
sulphur
G. D. Bowen, M.Sc.: mycorrhiza investigations in *Pinus radiata*
J. R. Harris, M.Sc.: microbial production of soil toxins
R. W. L. Kimber, B.Sc., Ph.D.: straw toxicities
J. N. Ladd, M.Sc., Ph.D.: synthesis and decomposition of humic substances

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Miss Barbara M. McDougall, M.Sc., Ph.D.: root exudates
A. D. Rovira, B.Sc.Agr., Ph.D.: rhizosphere investigations

(iv) *Soil Survey and Pedology*

C. G. Stephens, D.Sc.: soil classification; land utilization; geomorphology
G. Blackburn, B.Agr.Sc.: pedology; geomorphology
R. W. Jessup, M.Sc.: pedology; geomorphology
K. H. Northcote, B.Agr.Sc.: soil classification and pedology
W. T. Ward, M.Sc.: geomorphology and pedology

(v) *Mineralogy*

K. Norrish, M.Sc., Ph.D.: clay mineralogy; X-ray spectroscopy; colloid chemistry
E. Z. Arlidge, M.Sc. (N.Z.), Ph.D. (Aberd.): experimental pedology; electron microscopy
J. T. Hutton, B.Sc.: soil genesis; analytical techniques
T. Kato, M.Sc., Ph.D.: mineralogy; crystallography
A. C. Oertel, D.Sc.: spectrography; pedology; geochemistry
E. W. Radoslovich, M.Sc., Ph.D.: crystallography; electron microscopy
C. B. Wells, M.Agr.Sc.: micropedology; experimental pedology

(vi) *Zoology*

K. E. Lee, D.Sc.: soil zoology
T. G. Wood, B.Sc., Ph.D.: soil zoology

(b) AT THE CUNNINGHAM LABORATORY

Mill Road, St. Lucia, S.W.6, Queensland. Tel.: 7 3121 (Brisbane). Cables: Coresearch, Brisbane

G. D. Hubble, B.Agr.Sc., *Officer-in-Charge*: pedology
W. Arndt, M.Agr.Sc.: soil structure; soil management
G. G. Beckmann, M.Sc., Ph.D.: pedology and micropedology
A. E. Martin, B.Sc., D.Sc.Agr.: soil fertility; nitrogen cycle
A. W. Moore, M.Sc., Ph.D.: nitrogen transformations by micro-organisms
G. B. Stirk, M.Sc.: soil water relations and structure
D. C. van Dijk, Ing.Agr., D.Sc.: pedology; geomorphology

(c) AT THE PASTORAL RESEARCH LABORATORY, Townsville

CSIRO Private Mail Bag, P.O. Townsville, Queensland, Tel.: 9 4855 (Townsville). Cables: Coresearch, Townsville

R. F. Isbell, M.Sc., *Officer-in-Charge*: pedology
B. J. Crack, M.Sc.: soil chemistry

(d) AT SOUTH EASTERN REGIONAL SOILS LABORATORY

C/o CSIRO Laboratories, Black Mountain, via Canberra City, A.C.T. (P.O. Box 109, Canberra City, A.C.T.) Tel.: 4 0455 (Canberra). Cables: Coresearch, Canberra. Teleprinter: 62003

B. E. Butler, B.Sc.Agr.: *Officer-in-Charge*: pedology; sedimentology
R. Brewer, D.Sc.: soil mineralogy; micropedology
J. D. Colwell, B.Sc.Agr., Ph.D.: soil fertility; soil phosphorus
W. H. Litchfield, B.Sc.Agr.: pedology; palynology
J. Loveday, M.Agr.Sc., Ph.D.: pedology; soil fertility
D. S. McIntyre, M.Sc., Ph.D.: water relations and structure of clay soils
J. R. Sleeman, B.Sc.Agr.: micropedology; soil microscopy
P. H. Walker, M.Sc.Agr., Ph.D.: pedology; sediment transport

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- (e) AT IRRIGATION RESEARCH STATION, Griffith, N.S.W.
Private Bag, Griffith, N.S.W. Tel.: 1701, 1702. Cables: Coresearch, Griffith. Teleprinter: 69117
A. V. Blackmore, B.Sc., Ph.D.: soil physics; structure and water relations of clay soils
- (f) AT TASMANIAN REGIONAL LABORATORY
"Stowell", Stowell Avenue, Hobart, Tas. Tel.: 2 2786, 2 2787. Cables: Coresearch, Hobart
K. D. Nicolls, B.Sc., B.Agr.Sc.: *Officer-in-Charge*: pedology; soil fertility
- (g) AT WESTERN AUSTRALIAN REGIONAL LABORATORY
CSIRO Private Mail Bag, P.O. Nedlands, W. Aust. Tel.: 86 2451. Cables: Coresearch, Perth
M. J. Mulcahy, B.Sc., Ph.D.: *Officer-in-Charge*: pedology
E. Bettenay, M.Agr.Sc.: pedology
H. M. Churchward, M.Sc.Agr.: pedology
G. Dimmock, B.Sc.: pedology
J. Keay, B.Sc., Ph.D.: soil fertility; pine nutrition
W. M. McArthur, B.Sc.: pedology; soil fertility
- 15. Division of Tropical Pastures**
Cunningham Laboratory, Mill Road, St. Lucia, S.W.6, Queensland. Tel.: Brisbane 7 3121. Cables: Coresearch, Brisbane
J. Griffiths Davies, B.Sc.Hons., Ph.D., D.Sc., *Chief of the Division*
E. M. Hutton, B.Agr.Sc., D.Sc., *Assistant Chief of the Division*
A. G. Eyles, B.Agr.Sc., *Laboratory Secretary*
- (a) AGROSTOLOGY AND ECOLOGY
J. Griffiths Davies, B.Sc.Hons., Ph.D., D.Sc.: agrostology, north eastern Australia
W. W. Bryan, M.Agr.Sc.: agrostology, coastal lowlands, S.E. Queensland
J. E. Coaldrake, M.Sc.: autecology of brigalow (*Acacia harpophylla*)
R. L. Hall, B.Sc.Agr.Hons., Ph.D.: agrostology, spear grass region
R. J. Jones, B.Sc.Agr.Hons., D.T.A. (Trin.): pasture ecology, species assessment under grazing
L. 't Mannetje, Ir. (Wag.): agrostology, spear grass region
R. Roe, B.Sc.Agr.: agrostology, sub-tropical dairy lands
J. S. Russell, B.Agr.Sc., Ph.D.: fertility problems, brigalow solodic soils
N. H. Shaw, B.Agr.Sc.Hons.: agrostology, spear grass region
J. C. Tothill, B.Agr.Sc., Ph.D.: autecology of spear grass (*Heteropogon contortus*)
- (b) GENETICS, PLANT BREEDING AND LEGUME BACTERIOLOGY
E. M. Hutton, B.Agr.Sc., D.Sc.: genetics, pasture legume breeding
R. A. Bray, B.Agr.Sc., Ph.D.: genetics, lucerne breeding
D. E. Byth, B.Agr.Sc., Ph.D.: genetics, *Glycine max.* and *Glycine javanica* breeding
J. B. Hacker, B.Sc.Agr.Hons., Ph.D.: cytogenetics, breeding of *Setaria sphacelata*
D. O. Norris, D.Sc.Agr.: legume breeding, *Rhizobium* studies in tropical legumes
A. J. Pritchard, B.Sc.Hons.: cytogenetics, pasture sorghum breeding
- (c) PLANT CHEMISTRY AND PHYSIOLOGY, PLANT AND ANIMAL NUTRITION
C. S. Andrew, M.Agr.Sc.: plant nutrition, nutrient uptake
C. W. Ford, B.Sc.Hons., Ph.D.: carbohydrate chemistry of tropical pasture species

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C. T. Gates, M.Sc.Agr.: plant physiology, environment and plant growth
M. P. Hegarty, M.Sc., Ph.D.: plant chemistry, amino acids in plants
E. F. Henzell, B.Agr.Sc.Hons., D.Phil.: soil fertility, nitrogen studies
R. E. White, B.Agr.Sc., D.Phil.: soil fertility phosphate studies
P. C. Whiteman, M.Agr.Sc., Ph.D.: environmental plant physiology
J. R. Wilson, M.Sc.Agr., Ph.D.: plant physiology growth studies

(d) AT TOWNSVILLE PASTORAL RESEARCH LABORATORY

Private Mail Bag, Post Office, Townsville. Tel.: Townsville 94855. Cables: Coresearch, Townsville

L. A. Edye, M.Agr.Sc.: *Officer-in-Charge*: agrostology, tropical N.E. Australia
P. Gillard, B.Sc.Hons., Ph.D.: agrostology, spear grass region
R. K. Jones, B.Agr.Sc., Ph.D.: nutrition of tropical pasture species
R. L. McCown, B.Sc., Ph.D.: agrostology—wet tropical coast
M. J. Playne, B.Agr.Sc., Ph.D.: evaluation of tropical pasture species

(e) AT COOPER LABORATORY, Lawes

Queensland Agricultural College, Lawes, Tel.: Gatton 1

R. Milford, M.Agr.Sc., Ph.D.: *Officer-in-Charge*: nutritive evaluation of pastures
D. J. Minson, B.Agr.Sc., Ph.D., A.R.I.C.: nutritive evaluation of pastures

16. Wheat Research Unit

C/o The Bread Research Institute of Australia, Epping Road, North Ryde, N.S.W. (Private Bag, P.O., North Ryde, N.S.W.). Tel.: 88 0211. Cables: Care Bresearch, Sydney

E. E. Bond, A.R.M.T.C., F.R.A.C.I., *Officer-in-Charge*
M. V. Tracey, M.A., *Leader of Unit*: biochemistry of endosperm proteins and lipids
J. W. Lee, Ph.D.: biochemical basis of wheat quality
D. J. Winzor, Ph.D.: biophysical studies on interacting systems

17. Division of Wildlife Research

(a) DIVISIONAL HEADQUARTERS

"Gungahlin", Barton Highway, Canberra, A.C.T. (P.O. Box 109, Canberra City, A.C.T.). Tel.: 42328, 42329, 44328. Cables: Coresearch, Canberra

H. J. Frith, D.Sc.Agr., *Chief of Division*: marsupial and bird ecology

(i) *Marsupial Biology*

P. T. Bailey, B.Sc., Dip.Agr.Ent.: ecology of red kangaroos (movements)
J. H. Calaby: biology and taxonomy of marsupials, surveys of native mammals
Miss M. J. Clark, B.Sc.: physiology of reproduction in marsupials
D. L. McIntosh: ecology of grey kangaroos (movements)
W. E. Poole, B.Sc.: ecology of grey kangaroos (reproduction)

(ii) *Rabbit Biology*

K. Myers, B.Sc., *Leader*: ecology of small mammals with emphasis on studies of populations at high densities; arid zone species
K. D. Casperson, B.Sc.: ecology of rabbits (arid zone pastoral areas)
J. D. Dunsmore, B.V.Sc., Ph.D.: ecological aspects of rabbit parasitology: endocrine and genetic aspects of parasite-host relationship
B. V. Fennessy, B.Agr.Sc.: rabbit control
P. J. Fullagar, B.Sc., Ph.D.: ecology of rabbits (movements)
R. L. Hughes, B.Sc.: physiology of reproduction in rabbits; spermatozoon morphology in marsupials

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- R. Mykytowycz, D.V.M.: rabbit behaviour (role of smell and odoriferous glands); some aspects of stress
I. P. Parer, B.Sc.: ecology of rabbits (temperate agricultural areas)
B. S. Parker, B.Sc.: ecology of rabbits (distribution)

(iii) *Field Ecology*

- L. W. Braithwaite, B.Sc.: ecology of waterfowl
A. E. Newsome, B.Sc.: dingo investigations; marsupial ecology
I. C. R. Rowley, B.Sc.: ecology of ravens
G. F. van Tets, M.A., Ph.D.: behaviour and ecology of bird problems on airfields

(iv) *Population Regulation in Birds*

- R. Carrick, B.Sc., Ph.D.: bird ecology (Australian magpie; Antarctic species)
Miss S. E. Ingham, B.A.: ecology of Antarctic and Australian seals and birds

(v) *Animal Physiology and Biochemistry*

- M. E. Griffiths, D.Sc.: physiology and biochemistry of marsupials and echidnas

(b) WESTERN AUSTRALIAN UNIT

Cnr. Clayton and Fyfe Rd., Helena Valley via Midland Junction, W.A. Tel.: 743356. Cables: Coresearch, Perth

- D. L. Serventy, B.Sc., Ph.D. *Leader*: bird ecology, especially short-tailed shearwater and arid zone species
S. J. J. F. Davies, B.A.: study of emu and black cockatoo
M. Ridpath, B.Sc.: study of Tasmanian Native Hen and Wedge-tailed Eagle
F. N. Robinson, B.A.: animal sounds and communication

(c) AT ALICE SPRINGS, N.T.

c/- Arid Zone Research Centre, P.O. Box 77, Alice Springs, N.T. Tel.: 288.
Cables: Coresearch, Alice Springs

- A. K. Shipway, B.Sc.: dingo investigations

18. Research Institutes Sponsored by CSIRO

(a) THE AUSTRALIAN WINE RESEARCH INSTITUTE

Urrbrae, S. Aust. (Private Mail Bag No. 1, Glen Osmond, S. Aust.). Tel.: 793611, 796002 (Adelaide)

CSIRO until early 1956, conducted oenological research at the Waite Agricultural Research Institute. With the formation of the Australian Wine Research Institute, the responsibility for this work has passed to the latter Institute.

- J. C. M. Fornachon, B.Agr.Sc., M.Sc., *Director*: wine microbiology
C. R. Hale, B.Sc.Agr., Ph.D.: vine physiology
B. C. Rankine, M.Sc.: wine yeasts; wine chemistry
T. C. Somers, M.Sc.: wine chemistry

(b) BREAD RESEARCH INSTITUTE OF AUSTRALIA

Epping Road, North Ryde, N.S.W. (Private Bag, P.O., North Ryde, N.S.W.).
Tel.: 88 0211 (Sydney). Cables: Bresearch, Sydney

- E. E. Bond, A.R.M.T.C., F.R.A.C.I., *Director*
G. E. Hibbard, Ph.D.: dough physics
H. J. Moss, B.Sc., A.R.A.C.I.: wheat quality; cereal investigations
H. Zentner, Ph.D.: chemical investigations; cereals

COMMONWEALTH OF AUSTRALIA

B. COMMONWEALTH DEPARTMENT OF HEALTH

CANBERRA, A.C.T. Tel.: 61 9111 (Animals), 4 0784 (Plants). Cables: Health Canberra

(a) PLANT QUARANTINE BRANCH

J. R. Morschel, B.Sc.Agr., H.D.A., *Assistant Director-General (Plant Quarantine)*
K. W. Dillon, B.Sc., *Plant Quarantine Officer (Entomology)*
B. H. Pratt, B.Sc.Agr., B.Agr.Sc.Hons., Ph.D., *Plant Quarantine Officer (Plant Pathology)*
L. Smee, B.Sc.Agr., *Plant Quarantine Officer (Entomology)*
J. O. Smith, B.Sc.Agr., H.D.A., *Plant Quarantine Officer (Botany, Horticulture, Agronomy)*
P. W. Unger, B.Sc.Agr., *Plant Quarantine Officer (Virology)*

In all States there is a Chief Quarantine Officer (Plants) who is an officer of the State Department of Agriculture.

(b) ANIMAL QUARANTINE BRANCH

K. S. McIntosh, B.V.Sc., H.D.A., *Director*
H. R. Peisley, B.V.Sc., Dip.Pub.Ad., *Assistant Director*
J. F. Sainty, B.V.Sc., *Veterinary Officer*
I. D. Cameron Stephen, M.R.C.V.S., *Senior Veterinary Officer*

In all States the principal Veterinary Officer is the Chief Quarantine Officer (Animals).

C. COMMONWEALTH SERUM LABORATORIES COMMISSION

45 Poplar Road, Parkville, N.2., Victoria. Tel.: 38 2101. Cables: Serums, Melbourne

D. T. Oxe, B.V.Sc., D.V.Sc., *Principal Veterinary Consultant (Research)*
W. Anderson, M.R.C.V.S., *Veterinary Services Officer*
W. A. Geering, B.V.Sc., *Veterinary Officer (Research)*
P. F. Lewis, B.V.Sc., *Veterinary Services Officer*
C. E. Liefman, B.V.Sc., *Veterinary Services Officer*

D. DEPARTMENT OF NATIONAL DEVELOPMENT

1. Forestry and Timber Bureau

Canberra, A.C.T. Tel.: 81 1244. Cables: Forbureau, Canberra

M. R. Jacobs, M.Sc., Dr.Ing., Ph.D., Dip.For. (Oxon.), *Director-General*
C. S. Cree, O.B.E., B.A.For. (Oxon.), *Technical Secretary to the Director-General*

2. Forest Research Institute

Woden, Canberra, A.C.T. Tel.: 81 1466. Cables: Forbureau, Canberra

(a) HEADQUARTERS

D. A. N. Cromer, Dip.For., M.Sc., D.Sc.For., *Director*
J. R. B. Angus, B.Sc.For., *Technical Secretary*

(b) FOREST MANAGEMENT RESEARCH SECTION

M. L. Benson, Dip.For., B.Sc.For., *Acting Officer-in-Charge*

(c) NORTHERN TERRITORY SECTION

R. W. Evans, Dip.For., B.Sc.For., *Officer-in-Charge*
C. R. Palzer, Dip.For., B.Sc.For., *Forestry Officer I: silviculture*
G. Stocker, Dip.For., B.Sc.For., *Forestry Officer II: fire control*

(d) PROTECTION SECTION

- A. G. McArthur, Dip.For., B.Sc.For., *Officer-in-Charge*
 P. Cheney, Dip.For., *Forestry Officer I*: fire control
 R. T. G. Greaves, Dip.For., B.Sc.For., *Forestry Officer II*: entomology
 J. H. T. Kellow, Dip.For., B.Sc.For., *Forestry Officer III*: fire control
 R. T. Morland, Dip.For., B.Sc.For., *Forestry Officer II*: watershed management
 W. Stahl, Dip.Agr., Ing.Agr.Trop., *Biologist II*: pathology
 R. J. Thistlethwaite, Dip.For., B.Sc.For., *Forestry Officer I*: watershed management

(e) REGIONAL SECTION

- R. J. Slinn, Dip.For., B.Sc.For., *Acting Officer-in-Charge*

(i) *Gippsland Regional Station, Traralgon, Vic.*

- D. J. Danbury, B.Sc.For.Hons., M.Sc., *Forestry Officer I*: physiology
 K. G. Eldridge, Dip.For.Tech., M.Sc., *Forestry Officer II*: genetics

(ii) *Southern Regional Station, Mt. Gambier, S. Australia*

- B. A. Mitchell, B.Sc.For., *Forestry Officer III*: silviculture
 C. K. Pawsey, Dip.For., B.Sc.For., *Forestry Officer II*: genetics
 J. H. Ruiter, Ing.Agr., *Forestry Officer II*: physiology

(iii) *Tasmanian Regional Station, Hobart, Tas.*

- P. J. Bowling, Dip.For., B.Sc.For., *Forestry Officer III*: yield
 M. P. Coutts, B.Sc.For., *Forestry Officer I*: entomology (Sirex)
 J. F. Titze, Ing.Agr., *Biologist II*: pathology

(iv) *Western Regional Station, Kelmscott, W. Australia*

- F. D. Podger, Dip.For., B.Sc.For., *Forestry Officer II*: silviculture

(f) SEED SECTION

- E. Larsen, M.Sc.For., *Forestry Officer II*: seeds
 P. B. Telford, Dip.An.Hus., Dip.For., B.Sc.For., *Forestry Officer I*: seeds

(g) SILVICULTURAL RESEARCH SECTION

- J. M. Fielding, Dip.For., M.Sc.For., D.Sc.For., *Officer-in-Charge*
 A. G. Brown, Dip.For., B.Sc.For., *Forestry Officer III*: genetics
 K. W. Cremer, Dip.For., B.Sc.For., *Forestry Officer II*: silvicultural techniques
 R. D. Johnston, D.F.C., B.Sc.Hons., Ph.D., D.I.C., *Botanist III*: botany
 J. A. Sinden, B.Sc.For.Hons., M.F., Ph.D., *Forestry Officer I*: silvicultural techniques
 P. Snowdon, B.Sc.Agr., *Biologist I*: soils
 J. W. Turnbull, B.Sc.For.Hons., *Forestry Officer I*: genetics
 H. D. Waring, B.Sc.Hons., *Biologist III*: soils

3. **Timber Supply Economics Branch**

203 Collins Street, Melbourne. Tel.: 63 1021

- A. G. Hanson, B.Sc.For., B.Com., Dip.For., *Officer-in-Charge*

(a) FOREST UTILIZATION RESEARCH SECTION

- D. L. Craker, B.Sc., Dip.For., *Forestry Officer III*

(i) *Native Forest Utilization Research sub-section*

- K. W. Groves, B.Sc., *Forestry Officer II*
 J. deVries, Dip.Ing., For.LR (Neth.), Dip.For. (Cantab.), *Forestry Officer I*

(ii) *Plantation Utilization Research Section*

- C. M. Kerruish, B.Sc., Dip.For., *Forestry Officer II*
 J. A. S. Galvin, B.Sc., Dip.For., *Forestry Officer I*

COMMONWEALTH OF AUSTRALIA

(b) FOREST ECONOMICS RESEARCH SECTION

J. Redmond, B.Sc.(For.), B.Com., *Forestry Officer I*

E. DEPARTMENT OF PRIMARY INDUSTRY

Bureau of Agricultural Economics

Barton, Canberra, A.C.T. Tel.: U 0425. Cables: Agec, Canberra

(a) EXECUTIVE

D. H. McKay, B.Ec., *Director*

E. S. Hoffman, B.Sc.Agr., B.Com., M.Sc., *Assistant Director*

S. F. Harris, B.Ec.Hons., Ph.D., *Assistant Director*

A. W. Hooke, B.Ec.Hons., Dip.Ed., *Senior Economist*

(b) WOOL RESEARCH SECTION

B. J. L. Fernon, B.Ec., *Officer-in-Charge*

(c) BEEF RESEARCH SECTION

E. L. Jenkins, B.A.Econ.Hons., *Officer-in-Charge*

(d) COMMODITIES SECTION

N. D. Honan, B.Com., *Officer-in-Charge*

(e) GENERAL AND STATISTICS SECTION

E. A. Saxon, B.Com., Dip.Agr.Ec., *Officer-in-Charge*

(f) LAND USE PROJECTS SECTION

W. T. Allen, B.Com., Dip.Agr.Ec., *Officer-in-Charge*

(g) INDUSTRY SURVEYS SECTION

R. A. Daly, M.Sc.Agr., *Officer-in-Charge*

F. DEPARTMENT OF TERRITORIES

1. NORTHERN TERRITORY ADMINISTRATION

(a) Agriculture Branch

Private Bag 10, Post Office, Darwin, N.T. Tel.: 489

T. R. Lawler, B.Sc.Agr., *Acting Director and Agronomist Class 3*: direction of agricultural research and development for Northern Territory

R. W. Albrecht, B.Sc.Agr., *Agronomist Class 2*: field research on arid zone pastures, irrigated and fodder crops, and extension to Beef Cattle Industry

S. Baseden, B.Sc., *Agronomist Class 3*: direction of research science services section particularly soils and plant analyses

Ching Sing Li, B.Agr.Sc., M.Sc., Ph.D., *Entomologist Class 2*: field and laboratory research into rice and cotton insect pests

B. Frank, B.Rur.Sc., *Agronomist Class 1*: field research on pastures of higher rainfall zone

T. E. Friend, B.Sc.Agr., *Agronomist Class 3*: direction of research and operations of Experiment Farms

J. B. Heaton, B.Sc., Assoc. A.I.M.M., *Biologist Class 2*: field and laboratory research into plant diseases

J. J. Martin, B.Agr.Sc., *Botanist Class 2*: systematic botany of higher rainfall zone of Northern Territory

COMMONWEALTH OF AUSTRALIA

- J. D. Sturtz, B.Agr.Sc., *Agronomist Class 2*: direction of pasture research programme agronomy section high rainfall zone
- D. G. Tulloch, B.Agr.Sc., *Biologist Class 2*: field research on pests of pastures and crops particularly wallabies
- P. J. Walter, B.Sc.Trop.Agr., *Agronomist Class 2*: field research into soil erosion problems
- L. E. Woods, B.Sc.Agr., M.Sc.Agr., Ph.D., *Agronomist Class 2*: field research pastures and fodder crops dry monsoonal region

(b) Animal Industry Branch

Mitchell Street, Darwin, N.T. Tel.: 489. Cables: Chiefvetoff, Darwin (or Alice Springs)

- G. A. Letts, B.V.Sc., *Director of Animal Industry*: direction of research into animal disease and husbandry problems for the Northern Territory
- B. Hart, B.V.Sc., *Assistant Director of Animal Industry*: direction of research into disease and husbandry problems in the Southern portion of the Territory including scientific services
- R. W. Gee, B.V.Sc., *Assistant Director of Animal Industry*: direction of research into disease and husbandry problems in the Northern portion of the Territory including extension services
- J. H. Auty, B.V.Sc., *Senior Animal Husbandry Officer*: research into husbandry and management problems of beef cattle industry
- G. M. Chippendale, B.Sc., *Botanist*: systematic botany of Northern Territory flora and ecology of arid zone vegetation
- T. E. Gaffney, B.V.Sc., *Veterinary Officer*: field research animal diseases
- P. T. Hooper, B.V.Sc., *Veterinary Officer*: field research animal diseases particularly Kimberley horse disease
- G. W. Kirby, B.Rur.Sc., *Animal Husbandry Officer*: research into animal husbandry and management problems particularly beef cattle genetics
- G. L. Mitchell, B.Rur.Sc., *Animal Husbandry Officer*: research into animal husbandry and management problems particularly nutrition and reproduction
- L. R. Murray, B.Sc., *Organic Chemist*: chemical aspects of plant poisoning of livestock particularly sodium fluoracetate
- B. M. Paine, B.V.Sc., *District Veterinary Officer*: field research animal diseases particularly contagious bovine pleuropneumonia
- E. R. Pitt, B.V.Sc., *Veterinary Officer*: field research animal diseases
- B. Rideout, B.V.Sc., *Veterinary Officer*: field research animal diseases
- B. D. Siebert, B.Sc., *Biochemist*: research into renal physiology and water metabolism of beef cattle
- G. W. Smith, B.V.Sc., *Veterinary Officer*: field research animal diseases

2. TERRITORY OF PAPUA AND NEW GUINEA

(a) Department of Agriculture, Stock and Fisheries

HEADQUARTERS: Konedobu, Port Moresby, T.P.N.G. Tel.: Moresby 4121.
Cables: Agric, Konedobu

- F. C. Henderson, B.Sc.Agr., M.H.A., *Director*
- M. L. Parker, M.Sc.Agr., *Agricultural Economist*
- Mrs. W. E. Filewood, B.Com.: agricultural economics
- M. E. D. Reed, B.Sc.Agr.: agricultural economics

(i) DIVISION OF ANIMAL INDUSTRY

- J. L. Anderson, B.V.Sc., *Chief of Division*
- D. J. Purdy, B.V.Sc.: infertility in cattle

COMMONWEALTH OF AUSTRALIA

Veterinary Laboratory, Kila Kila, Port Moresby Tel.: Moresby 5360. Cables:
Vetlab, Kila Kila

Mrs. P. K. Abbott, B.V.Sc.: veterinary pathology

Mrs. A. M. Rampling, B.Sc.: bacteriology

N. T. Talbot, B.V.Sc.: parasitology

New Guinea Lowlands Livestock Station, Erap, Lae Tel.: Lae 2599. Cables:
Agric, Erap

J. D. Glasgow, B.V.Sc., *Officer-in-Charge*: cross-breeding Zebu cattle

A. J. Pejic, B.Agr.: cross-breeding Zebu cattle

District Veterinary Office, Goroka Tel.: Goroka 49. Cables: Vetoff, Goroka

P. R. Harvey, B.V.Sc.: field control of anthrax

Animal Industry Centre, Kurakakaul, Rabaul Cables: Vetoff, Rabaul

J. M. J. Best, B.A., Vet.M.B.: growth rate and feed conversion in European,
native and crossbred pigs

District Veterinary Office, Lae Tel.: Lae 2065. Cables: Vetoff, Lae

J. A. Hamilton, B.V.Sc.: infertility in cattle

(ii) DIVISION OF EXTENSION AND MARKETING

W. L. Conroy, B.Sc.Agr., *Chief of Division*

J. C. Lamrock, B.Sc.Agr., D.T.A., Dip.Agr.Extn.: extension methods

(iii) DIVISION OF PLANT INDUSTRY

A. W. Charles, B.Sc.Agr., M.Sc., *Chief of Division*

Agronomy

A. E. Charles, B.Sc.Agr., *Economist Botanist*

Highlands Agricultural Experiment Station, Aiyura Cables: Agric, Aiyura

R. S. Carne, B.Agr.Sc., *Agronomist in Charge*: Arabica coffee

C. R. Coffman, B.S.A.: food crops

D. R. Petty, B.Agr.Sc.: pastures

T. J. E. Quinlan, B.Sc.Agr.: pyrethrum

Plant Industry Centre, Bubia, Lae Tel.: Lae 2062. Cables: Agric, Bubia

C. S. Edwards, B.Sc.Agr., M.Sc.: pastures

K. J. Blackburn, B.Sc.Agr.: peanut agronomy, herbicide trials

G. D. Hill, B.Sc.Agr.: pastures

Agricultural Experiment Station, Epo, Bereina Cables: Agric, Epo

L. R. Brownhall, B.Sc.Agr., *Agronomist in Charge*: rice, pastures

Lowlands Agricultural Experiment Station, Keravat, Rabaul Cables: Agric,
Lowlands

P. N. Byrne, B.Agr.Sc., *Agronomist in Charge*: cacao

H. Burton, B.Agr.Sc.: cacao

N. J. Mendham, B.Sc.Agr.: coconut, food crops

J. B. O'Donohue, B.Agr.Sc.: cacao

J. H. Sumbak, B.Sc.Agr.: coconut, robusta coffee

Chemistry

D. W. Murty, B.Sc.Agr., *Principal Chemist*: soils and general chemistry

Miss C. A. Fowler, B.Sc.: plant analysis

C. R. Levy, B.Sc.: soil analysis

P. J. Southern, B.Sc.: plant nutrition

Entomology

T. L. Fenner, B.Agr.Sc.: agricultural entomology, curating of insect collection

Miss R. M. Stevens, B.Sc.: identification of pests, biological control

J. J. Szent-Ivany, Ph.D., Dip.Ec.Pol.Sc.: taxonomy and zoogeography

Lowlands Agricultural Experiment Station, Keravat

G. S. Dun, B.Sc.Agr., *Principal Entomologist*: biological control

D. F. O'Sullivan, B.Agr.Sc.: systematic and agricultural entomology (chemical and biological control)

Department of Agriculture, Stock and Fisheries, Popondetta Cables: Agric, Popondetta

T. B. Bourke, B.Sc.Agr.: ecology

Plant Introduction

G. P. Keleny, B.A., Dip.Pub.Admin., Dip.Agr., *Plant Introduction Officer*

Plant Pathology

Miss D. E. Shaw, M.Sc.Agr., Ph.D., *Principal Plant Pathologist*: pathology and taxonomic mycology

W. A. Layton, B.Sc.Agr.: root rots and general pathology

M. J. Trinick, B.Sc.Agr.: *Rhizobium*

Lowlands Agricultural Experiment Station, Keravat

P. G. Hicks, B.Agr.Sc.: cacao pod rots and general pathology

R. J. van Velsen, M.Agr.Sc., Ph.D.: virology

Soil Survey

G. K. Graham, B.Sc.Agr., D.T.A., *Principal Soil Survey Officer*: land use and settlement

F. P. Aland, B.Sc.Agr.: soil and land use surveys

A. C. Hartley, B.Agr.Sc., D.T.A.: soil and land use surveys

P. G. E. Searle, M.Agr.Sc.: soil and land use surveys

(b) Department of Forests

Konedobu, Papua

W. R. Suttie, B.Sc. (Q'ld.), *Director*

(i) DIVISION OF MANAGEMENT

H. D. M. McIntosh, B.Sc. For. (Syd.), Dip.For. (Canb.), *Chief of Division*

E. D. Shields, B.Sc.For. (Q'ld.), Dip.For. (Canb.), *Research Forester*: rain forest inventory

(ii) DIVISION OF SILVICULTURE

K. J. White, B.Sc.For. (Q'ld.), Dip.For. (Canb.), *Chief of Division*

A. L. Cameron, B.Sc.For. (Q'ld.), Dip.For. (Canb.), *Senior Research Officer*: genetic improvement of *Tectona grandis*

L. T. Clifford, B.Sc.For. (Syd.), Dip.For. (Canb.), *Research Forester*: genetic improvement of *Araucaria cunninghamii* and *A. hunsteinii*

J. E. Smith, B.Sc.For. (Syd.), Dip.For. (Canb.), *Research Forester*: afforestation of grasslands

(iii) DIVISION OF UTILIZATION

S. J. Colwell, B.Eng. (Melb.), *Chief of Division*

G. N. Vickers, B.Sc.For. (Q'ld.), Dip.For. (Canb.), *Preservation Forester*: improvement/durability under tropical conditions

G. AUSTRALIAN NATIONAL UNIVERSITY

1. Department of Forestry

P.O. Box 4, Canberra. A.C.T. Tel.: 81 1244. Cables: Natuniv, Canberra

J. D. Ovington, Ph.D., D.Sc. (Sheff.), F.F.S., F.I.Biol., *Professor and Head of Department*: ecology

COMMONWEALTH OF AUSTRALIA

K. P. McGrath, B.Sc., M.F. (Yale), *Associate Director of Forestry*: forest policy
E. P. Bachelard, B.Sc., M.F., Ph.D. (Yale), *Lecturer*: tree physiology
W. C. Boughton, M.E., A.S.T.C., *Lecturer*: hydrology
L. T. Carron, M.Sc.For., Dip.For. (Oxon.), *Senior Lecturer*: forest mensuration
R. G. Florence, M.Sc., Ph.D. (Syd.), *Lecturer*: silviculture
N. Hall, B.For.Sc.(N.Z.), *Senior Lecturer*: engineering
C. D. Hamilton, B.Sc. (W.A.), *Lecturer*: forest botany
W. A. Heather, B.Sc.For., M.Sc., Ph.D. (Canb.), *Lecturer*: pathology
D. Lamb, B.Sc.For. (W.A.), *Research Assistant*: physiology
P. Rudman, D.L.C., A.R.I.C., Ph.D. (Lond.), *Senior Lecturer*: wood properties
M. T. Tanton, B.Sc., Ph.D., D.I.C. (Lond.), A.R.C.S., *Lecturer*: zoology

2. Zoology Department

P.O. Box 4, Canberra, A.C.T. Tel.: 49 3139. Cables: Natuniv, Canberra

J. D. Smyth, Sc.D., *Professor and Head of Department*

J. A. Clegg, B.Sc., Ph.D. (Lond.), *Senior Lecturer*: parasitology

R. D. Hughes, B.Sc., A.R.C.S., Ph.D., D.I.C. (Lond.), *Senior Lecturer*: insect populations

NEW SOUTH WALES

A. DEPARTMENT OF AGRICULTURE

Farrer Place, Sydney (Box 36, G.P.O., Sydney). Tel.: 2 0536 Cables: Agridept, Sydney

G. Edgar, O.B.E., D.V.Sc., *Director-General of Agriculture*

R. M. Watts, B.V.Sc., *Deputy Director-General*

F. C. Butler, B.Sc.Agr., Ph.D. (Cantab.), *Assistant to Deputy Director-General*

J. L. Hager, D.F.C., LL.B., *Secretary*

S. L. Macindoe, Ph.D. (Minn.), B.Sc.Agr., *Chief Research Liaison Officer*

F. C. McCleery, B.Sc.Agr., *Biometrician*: biometry

1. Division of Animal Industry

Farrer Place, Sydney. Tel.: 2 0536. Cables: Animalind, Sydney

R. A. Hall, B.V.Sc., *Chief, Division of Animal Industry*

N. K. Golding, B.V.Sc., *Deputy Chief, Division of Animal Industry*

R. B. Dun, B.V.Sc., Ph.D., *Director of Animal Production Research*

(a) GLENFIELD VETERINARY RESEARCH STATION

Glenfield. Tel.: 6053-511/512/513

J. C. Keast, B.V.Sc., H.D.A., *Director of Veterinary Research*: toxaemic jaundice of sheep and leptospirosis

J. D. Barrett, B.Sc.Agr., *Livestock Officer*: vitamin A studies in sheep on drought rations

R. F. Bayfield, A.S.T.C., Chem.Dip., *Analyst*: vitamin E and selenium metabolism

H. E. R. Beattie, B.V.Sc., H.D.A., *Special Veterinary Officer*: artificial insemination of cows and infertility diseases

P. D. Claxton, B.V.Sc., *Veterinary Officer*: ovine brucellosis

R. H. R. Falk, B.V.Sc., *Special Veterinary Officer*: metabolic diseases of sheep and cattle

D. G. Fowler, M.Sc. (W.T.), *Livestock Officer*: ram fertility

P. J. Healey, B.V.Sc., *Veterinary Officer*: pathology

S. P. Hebden, B.V.Sc., *Assistant Principal Veterinary Officer*: ecto- and endo-parasites of sheep and cattle

D. M. Helwig, B.V.Sc., *Veterinary Officer*: rhinitis in pigs and swine fever

COMMONWEALTH OF AUSTRALIA

- I. K. Hotson, B.V.Sc., *Veterinary Officer*: internal parasitic diseases of livestock
D. Jakovljevic, M.B. (Marburg), *Research Officer*: infertility diseases and artificial insemination of cattle
Miss J. C. Kater, B.V.Sc., *Veterinary Officer*: diseases affecting central nervous system, neonatal losses in sheep, muscular dystrophy, distopathology and toxicology of Swainsona and Senecio species
M. Lindtner, Dr.Med.Vet. (Bologna), *Veterinary Officer*: monocytosis in fowls
I. R. Littlejohns, B.V.Sc., *Special Veterinary Officer*: ovine brucellosis and eperythrozoonosis, sporadic bovine encephalomyelitis
Miss H. M. Martin, B.V.Sc., *Veterinary Officer*: anticoagulation studies on blood
E. J. McBarron, B.V.Sc., *Principal Veterinary Officer*: metabolic diseases of cattle
P. A. McInnes, B.Sc.Wool Tech., *Livestock Officer*: drought feeding of sheep
P. J. Mylrea, B.V.Sc., *Special Veterinary Officer*: calf diseases
T. O'Byrne, A.S.T.C., *Analyst*: toxicology, particularly of heavy metals
J. B. Smith, B.V.Sc., *Veterinary Officer*: experimental pathology
C. E. J. Walker, B.V.Sc., *Veterinary Officer*: bacteriology and virology

(b) DISTRICT VETERINARY LABORATORY

Armidale. Tel.: Armidale 2376

- A. R. Jackson, B.V.Sc., Ph.D., *Special Research Officer*: ovine coccidiosis
M. G. Smeal, B.V.Sc., *Veterinary Officer*: internal parasites in sheep and cattle

(c) BOARD OF TICK CONTROL

Lismore. Tel.: Lismore 2674

- J. H. P. Dingle, A.S.T.C., *Analyst*: chlorinated hydrocarbons and organic phosphates as used in acaricides

(d) CATTLE TICK RESEARCH STATION

Wollongbar. Tel.: Wollongbar 279

- R. N. McCulloch, M.B.E., D.Sc.Agr., B.Sc., *Director of Cattle Tick Research*:
Entomologist: bionomics of cattle tick
Mrs. B. A. Curnow, B.V.Sc., *Veterinary Officer*: bovine babesiosis
J. A. Curnow, B.V.Sc., *Veterinary Officer*: bovine babesiosis
I. J. Lewis, B.Sc. (Rhodes), *Research Officer*: ecology of *Boophilus microplus*
J. Nolan, B.Sc.Agr., *Livestock Officer*: entomological research

2. Division of Dairying

Farrer Place, Sydney. Tel.: 2 0536. Cables: Agridept, Sydney

- D. W. Crowfoot, H.D.D., *Chief, Division of Dairying*
C. E. Chapman, H.D.D., *Deputy Chief, Division of Dairying*
B. O. E. Calder, B.Agr.Sc. (N.Z.), *Dairy Officer (Research)*: milking research
Vacant: *Dairy Officer (Research)*: dairy cattle genetics

3. Division of Horticulture

Farrer Place, Sydney. Tel.: 2 0536. Cables: Agridept, Sydney

- B. Owen French, B.Sc.Agr., H.D.A., *Chief, Division of Horticulture*
R. G. Kebby, *Deputy Chief, Division of Horticulture*
G. R. Gregory, B.Sc.Agr., R.D.Oen. (Rose.), *Principal Fruit Officer*: viticulture
D. Leggo, B.Sc.Agr., *Fruit Officer*: citrus
J. K. Long, B.Sc.Agr., *Principal Fruit Officer*: research
E. C. Whittaker, *Special Fruit Officer*: pome fruits
E. C. Connor, H.D.A., *Principal Fruit Officer*: extension
Vacant: *Special Fruit Officer*: citrus
C. H. Mort, H.D.A., *Special Fruit Officer*: stone fruits

COMMONWEALTH OF AUSTRALIA

- (a) AT C.S.I.R.O. FOOD PRESERVATION LABORATORIES, North Ryde
P.O. Box 43, Ryde. Tel.: 88 0233. Cables: Foodpres, Sydney
B. B. Beattie, B.Sc.Agr., *Fruit Officer*: fruit storage
K. J. Scott, B.Sc.Agr., Dip.Ed., *Fruit Officer*: fruit storage
- (b) GOSFORD CITRUS WASTAGE RESEARCH LABORATORY
Gosford. Tel.: Gosford 22481. P.O. Box 31
J. A. Seberry, B.Sc.Agr., *Fruit Officer*: citrus preservation methods
Miss S. K. Simpson, B.Sc.Agr., *Fruit Officer*: citrus preservation methods
- (c) MURWILLUMBAH LABORATORY
Murwillumbah. Tel.: Murwillumbah 305. P.O. Box 823
H. J. Cann, H.D.A., *Special Fruit Officer*: tropical fruits
- 4. Division of Marketing and Agricultural Economics**
Farrer Place, Sydney. Tel.: 2 0536. Cables: Agridept, Sydney
Research into economic problems of production and marketing of New South Wales farm products.
C. J. King, M.A., B.V.Sc., Dip.P.A., *Chief, Division of Marketing and Agricultural Economics*
P. C. Druce, B.Ec., *Deputy Chief, Division of Marketing and Agricultural Economics*
B. K. Compton, B.Ec., *Economics Officer*
R. E. Cooke-Yarborough, B.Sc., *Economics Officer*
J. W. Elston, B.Agr.Ec., *Economics Officer*
S. J. Filan, B.Agr.Ec., *Economics Officer*
J. W. Freebairn, B.Agr.Ec., *Economics Officer*
J. B. Keene, B.Agr.Ec., *Economics Officer*
G. Mason, M.Agr.Sc., *Special Economics Officer*: irrigation
J. Phillips, M.Sc.Agr., *Economics Officer*
B. J. Standen, B.Agr.Ec., *Economics Officer*
C. D. Throsby, M.Sc.Agr., *Economics Officer*
- (i) ARMIDALE REGIONAL CENTRE
Faculty of Agricultural Economics, University of New England, Armidale, N.S.W. Tel.: Armidale 2231
R. C. Duncan, B.Agr.Ec., *Economics Officer*
- (ii) LEETON REGIONAL CENTRE
Box 540, P.O., LEETON, N.S.W. Tel.: Leeton 179 and 351
A. J. Randall, B.Sc.Agr., *Economics Officer*
J. G. Ryan, B.Sc.Agr., *Economics Officer*
- (iii) TAMWORTH REGIONAL OFFICE
Box 547, P.O., Tamworth, N.S.W., Tel.: 4681/2
D. E. McCallum, B.Sc.Agr., *Economics Officer*
- (iv) WAGGA REGIONAL CENTRE
Box 477, P.O., Wagga, N.S.W. Tel.: Wagga 3955 and 4619
G. F. Donaldson, B.Sc.Agr., Dip.Agr.Ec., *Economics Officer*
- 5. Division of Plant Industry**
Farrer Place, Sydney. Tel.: 2 0536. Cables: Agridept, Sydney
W. H. G. Poggendorff, B.Sc.Agr., H.D.A., H.D.D., *Chief, Division of Plant Industry*

COMMONWEALTH OF AUSTRALIA

A. C. Orman, H.D.A., *Deputy Chief, Division of Plant Industry*
W. T. Atkinson, B.Sc.Agr., M.S. (Wis.), *Principal Agronomist: pastures*
J. H. Ballard, B.Sc.Agr., *Assistant Principal Agronomist: research*
E. W. Bowmaker, H.D.A., *Special Agronomist: irrigation*
J. W. Boyle, H.D.A., *Special Agronomist: maize, sorghum, fodder crops*
Mrs. B. E. Cook, B.Sc.Agr., *Agronomist: pastures*
G. A. Crawford, H.D.A., *Assistant Principal Agronomist: extension*
F. W. Cutting, H.D.A., *Senior Agronomist: rice, fibre, oil, miscellaneous crops*
F. F. Filan, B.Sc.Agr., *Special Agronomist: seed production*
R. W. Fitzsimmons, B.Sc.Agr., *Senior Agronomist: cereals*
K. R. Green, B.Sc.Agr., *Special Agronomist: weeds*
J. E. Jessup, B.Sc.Agr., *Special Agronomist: rice, fibre, oil, miscellaneous crops*
R. J. Jessup, B.Sc.Agr., *Research Officer: vegetables*
L. R. Kavanagh, B.Sc.Agr., *Principal Agronomist: research*
G. E. McMaster, H.D.A., *Agronomist: pastures*
A. D. Mears, B.Sc.Agr., *Senior Agronomist: weeds*
R. T. Spencer, H.D.A., *Special Agronomist: vegetables*
A. B. Spurrs, B.Sc.Agr. (Dunelm), *Seeds Officer*
J. Strang, B.Sc.Agr., *Assistant Principal Agronomist: pastures*
C. Walkden Brown, H.D.A., *Special Agronomist: cereals*
M. H. Walker, M.Sc.Agr., *Senior Agronomist: pastures*
F. A. York, H.D.A., *Special Agronomist: fodder conservation*
Vacant: *Officer-in-Charge, Cotton Fibre Testing Laboratory*

6. Division of Science Services

Victoria Road, Rydalmere. Postal: Private Mail Bag No. 10, Post Office,
Rydalmere, N.S.W. Tel.: 630 0251

C. J. Magee, D.Sc.Agr., M.S., *Chief, Division of Science Services*

(a) BIOLOGY

W. S. Sutton, B.Sc.Agr., *Chief Biologist*
Miss L. R. Fraser, D.Sc., *Senior Biologist: diseases of citrus*
R. N. Allen, B.Sc.Agr., *Plant Pathologist: field and fodder crops*
Miss B. J. Ballantyne, B.Sc.Agr., *Plant Pathologist: vegetables*
A. L. Bertus, B.Sc., *Plant Pathologist: ornamentals*
Miss P. Broadbent, B.Sc.Agr., *Plant Pathologist: citrus*
J. F. Burdett, M.Agr.Sc., *Plant Pathologist: field and fodder crops*
R. J. Conroy, B.Sc.Agr., *Special Plant Pathologist: vegetables*
K. E. Hutton, B.Sc.Agr., *Special Plant Pathologist: pome and stone fruits*
P. F. Kable, B.Sc.Agr., *Plant Pathologist: stone fruits*
T. B. Kiely, D.Sc.Agr., *Special Plant Pathologist: citrus fruits*
J. K. McGechan, B.Sc.Agr., *Plant Pathologist: grape vines*
R. W. McLeod, B.Sc.Agr., *Plant Pathologist: nematology*
R. D. Pares, B.Sc.Agr., *Plant Pathologist: pome and stone fruits*
R. J. Richards, B.Sc.Agr., Ph.D., *Bacteriologist: dairy bacteriology*
A. C. Robinson, B.Sc.Agr., *Bacteriologist: soil bacteriology, rhizobia*
R. J. Roughley, B.Sc.Agr., *Bacteriologist: soil bacteriology, rhizobia*
A. M. Smith, B.Sc.Agr., *Plant Pathologist: cereals and field crops*
J. Walker, B.Sc.Agr., *Plant Pathologist: systematic mycology*

(b) BOTANY

Research on systematic botany and determination of weeds, grasses and other plants.

H. K. C. Mair, B.Sc., *Director and Chief Botanist, National Herbarium and Royal Botanic Gardens*
Miss J. W. Vickery, D.Sc., F.L.S., *Senior Botanist*

COMMONWEALTH OF AUSTRALIA

Miss B. G. Briggs, B.Sc., Ph.D., *Botanist*
Miss N. C. Ford, B.Sc., *Botanist*
L. A. S. Johnson, B.Sc., *Botanist*
Mrs. V. Jones, M.Sc., *Botanist*
Mrs. A. T. Lee, M.Sc., *Botanist*
D. McGillivray, B.Sc.For., *Botanist*
Miss M. D. Tindale, D.Sc., *Botanist*

(c) AGRICULTURAL CHEMISTRY

T. H. Johns, M.Sc., A.R.A.C.I., *Chief Chemist*
A. N. Old, B.A., B.Sc.Agr., *Senior Chemist*: geo-chemistry
B. Barkus, B.Agr., *Chemist*: plant nutrition
W. C. Barnes, B.Sc.Agr., *Chemist*: cereals
J. Bradley, B.Sc.Agr., *Chemist*: soils, phosphorus
M. G. Chatfield, A.S.T.C., *Chemist*: waters and dairy products
R. S. Chesterfield, B.Agr., *Chemist*: cereals
F. W. Cradock, B.Sc.Agr., *Chemist*: plant nutrition
W. S. Gilbert, B.Sc., *Chemist*: pesticides
C. A. L. Hawkins, B.Sc.Agr., *Chemist*: soil surveys and soils
C. S. M. Humphris, Dip.App.Chem., *Chemist*: stock foods
E. H. Jacob, B.Sc.Agr., *Chemist*: cereals
D. R. Leece, B.Sc.Agr., *Chemist*: fruit quality
H. F. Nardin, B.Sc., *Chemist*: pesticides
D. K. O'Neill, M.Sc., Ph.D., *Special Chemist*: pesticides
R. D. Polhill, B.Sc., *Chemist*: rice nutrition
M. F. Redies, M.Sc., Ph.D., A.R.A.C.I., *Chemist*: physical and radio
A. M. H. Riddler, B.Sc., *Chemist*: soil surveys
C. C. Short, B.Sc., *Chemist*: physical
A. Siman, B.Sc.Agr., D.Agron., *Chemist*: soils
A. Solvyns, B.Sc., *Chemist*: stock foods
I. A. Vimpany, B.Sc.Agr., *Chemist*: soils, potassium
R. G. Weir, B.Sc.Agr., *Chemist*: plant nutrition

(d) ENTOMOLOGY

P. C. Hely, B.Sc.Agr., H.D.A., *Chief Entomologist*
G. A. J. Pasfield, B.Sc.Agr., *Senior Entomologist*: argentine ants
B. M. Braithwaite, B.Sc.Agr., *Entomologist*: banana, vegetables, pasture
M. Casimir, B.Sc.Agr., *Entomologist*: grasshoppers, aphids
C. E. Chadwick, B.Sc., *Entomologist*: systematic entomology
A. H. Friend, B.Sc.Agr., *Entomologist*: fruit fly
J. G. Gellatley, B.Sc.Agr., *Entomologist*: vegetables, citrus
F. A. C. Gibson, B.Sc., A.S.T.C., *Entomologist*: orchard mites, resistance studies
H. G. Greening, B.Sc.Agr., *Entomologist*: stored products
L. R. Greenup, B.Sc.Agr., *Entomologist*: pastures
E. L. Jones, B.A., *Entomologist*: vegetable and fruit pests
N. C. Lloyd, B.Sc.Agr., *Entomologist*: pome and stone fruits
G. J. Shanahan, B.Sc.Agr., M.Sc., Ph.D., *Special Entomologist*: insecticide resistance; sheep blowfly
W. E. Wright, B.Sc.Agr., *Entomologist*: pasture and cotton

7. Research Stations

- (a) ALSTONVILLE TROPICAL FRUIT RESEARCH STATION, Alstonville, N.S.W.
Tel.: Alstonville 130
D. S. Leigh, H.D.A., *Fruit Officer*: tropical fruits

COMMONWEALTH OF AUSTRALIA

- R. J. Rose, B.Sc.Agr., *Fruit Officer*: post-harvest physiology of bananas
T. Trochoulis, B.Sc.Hort. (Wash.), *Fruit Officer*: banana irrigation
D. W. Turner, B.Sc.Agr., *Fruit Officer*: banana nutrition

(b) BATHURST AGRICULTURAL RESEARCH STATION, Bathurst, N.S.W.
Tel.: Bathurst 3179

- M. H. Campbell, B.Sc.Agr., *Agronomist*: serrated tussock
W. J. Greenhalgh, M.Sc.Agr., *Senior Fruit Officer*: pome and stone fruits
Mrs. M. A. Oldham, B.Sc.Agr., *Fruit Officer*: pome and stone fruits

(c) BERRY WELFARE FARM, Berry, N.S.W.
Tel.: Berry 251

- J. Strang, B.Sc.Agr., *Senior Agronomist*: pastures

(d) CANBERRA DISTRICT
C/o Division of Plant Industry, C.S.I.R.O., P.O. Box 109, Canberra, A.C.T.
Tel.: J 0455

- P. R. Dann, B.Sc.Agr., *Senior Agronomist*: pastures
P. D. Stevenson, B.Rur.Sc., *Livestock Officer*: sheep reproduction

(e) CONDOBOLIN AGRICULTURAL RESEARCH STATION, Condobolin, N.S.W.
Tel.: Condobolin 81

- H. Brownlee, B.Sc.Agr., *Agronomist*: pastures
E. J. Corbin, B.Sc.Agr., *Agronomist*: wheat nutrition

(f) COWRA AGRICULTURAL RESEARCH STATION, Cowra, N.S.W.
Box 242 P.O. Tel.: Cowra 75

- Vacant: *Agronomist*: pastures

(g) DARETON HORTICULTURAL RESEARCH STATION, Dareton, N.S.W.
Box 63, P.O., Dareton. Tel.: Dareton 366 and 387

- M. C. Stannard, B.Sc.Agr., *Fruit Officer*: citrus
J. W. Turpin, Q.D.H., *Fruit Officer*: citrus and vines

(h) GLEN INNES AGRICULTURAL RESEARCH STATION, Glen Innes, N.S.W.
Tel.: Glen Innes 163

- R. Bowen, B.Sc.Agr., *Agronomist*: potato breeding
A. D. Doyle, B.Sc.Agr., *Agronomist*: tobacco culture
C. A. Eady, H.D.A., *Fruit Officer*: pome fruits
G. G. Robinson, B.Sc.Agr. (Natal), *Agronomist*: pastures
G. R. Scott, B.Sc.Agr., *Senior Agronomist*: maize breeding
F. Wiltshire, B.Sc.Agr., *Agronomist*: pastures

(i) GRAFTON AGRICULTURAL RESEARCH STATION, Grafton, N.S.W.
Tel.: Carr's Creek Junction 221

- D. Brooks, B.Sc.Agr., *Agronomist*: pastures
J. M. Colless, B.Sc.Agr., *Senior Agronomist*: maize breeding
E. J. Havilah, B.Sc.Agr., *Agronomist*: pastures
G. R. Hughes, B.Sc.Agr., *Agronomist*: maize breeding
D. A. O'Brien, B.Sc.Agr., *Agronomist*: pastures
G. P. M. Wilson, H.D.A., *Agronomist*: pastures

COMMONWEALTH OF AUSTRALIA

- (j) GRIFFITH VITICULTURAL RESEARCH STATION, Griffith, N.S.W.
P.O. Box 521 ZZ, Griffith. Tel.: Griffith 1530
A. F. Murray, H.D.A., *Fruit Officer*: viticulture
J. M. Sidlow, B.Sc.Agr., *Senior Fruit Officer*: drainage
C. R. Turkington, B.Sc.Agr., R.D.Oen. (S.A.), *Fruit Officer*: viticulture
- (k) LEETON AGRICULTURAL RESEARCH STATION, Leeton, N.S.W.
P.O. Box 582, Leeton. Tel.: Yanco 18
S. T. Dawe, B.Sc.Agr., *Livestock Officer*: lamb production
D. W. Hennessey, B.Rur.Sc., *Livestock Officer*: pasture utilization, beef cattle
I. D. Killeen, B.Sc.Agr., *Livestock Officer*: sheep breeding
L. G. Williams, B.V.Sc., *Special Veterinary Officer*: beef cattle management
P. Witschi, B.Sc.Agr., *Agronomist*: pastures (irrigation)
- (l) MAITLAND DISTRICT
Box 9, P.O., East Maitland, N.S.W. Tel.: Maitland 7325
R. S. Wetherall, B.Sc.Agr., *Senior Agronomist*: pastures
- (m) NARARA HORTICULTURAL RESEARCH STATION, Narara, N.S.W.
Tel.: Gosford 21044
J. E. Cox, B.Sc., *Senior Fruit Officer*: citrus
- (n) NARRABRI AGRICULTURAL RESEARCH STATION, Narrabri, N.S.W.
Private Mail Bag, Myall Vale Mail Run, Narrabri. Tel.: Wee Waa 292
T. E. Launders, B.Sc.Agr., *Agronomist*: pastures
B. J. Moraghan, B.Sc.Agr., *Agronomist*: cotton breeding
- (o) ORANGE AGRICULTURAL RESEARCH STATION, Orange, N.S.W.
Tel.: Orange 2664
I. G. Billingham, B.Sc.Agr., *Agronomist*: potato breeding and research
- (p) TAMWORTH AGRICULTURAL RESEARCH STATION, Tamworth, N.S.W.
Private Mail Bag, R.M.B. 944, Tamworth. Tel.: Nemingha 282, Tamworth 4681
W. V. Single, B.Sc.Agr., Ph.D., D.I.C., *Director of Research*: wheat physiology
R. J. Esdaile, B.Sc.Agr., *Agronomist*: wheat breeding
I. C. R. Holford, M.Sc.Agr., *Senior Research Officer*: plant nutrition
B. C. Imrie, B.Sc.Agr., *Agronomist*: hybrid wheat breeding
H. Marcellos, B.Sc.Agr., *Research Officer*: wheat physiology
E. M. Matheson, B.Sc.Agr., *Senior Research Officer*: wheat breeding
D. W. McNamara, B.Sc.Agr., *Agronomist*: weeds
K. P. M. Sheridan, B.Sc.Agr., *Agronomist*: pastures
J. A. Thompson, B.Sc.For., M.Sc., Ph.D., *Senior Research Officer*: pasture research
Miss B. Wark, B.Sc.Agr., *Research Officer*: durum wheat breeding
A. P. Wilkinson, B.Sc.Bot., *Senior Research Officer*: cereal chemistry
- (q) TAREE DISTRICT
P.O. Box 253, Taree, N.S.W. Tel.: Taree 131, 1330
R. D. Macadam, B.Sc.Agr., *Agronomist*: pastures
- (r) TEMORA AGRICULTURAL RESEARCH STATION, Temora, N.S.W.
Tel.: Temora 115
O. R. Southwood, B.Sc.Agr. (Natal), *Agronomist*: pastures

(s) **TRANGIE AGRICULTURAL RESEARCH STATION, Trangie, N.S.W.**
Tel.: Trangie 87

- M. E. Bourke, B.Sc. (W.T.), *Livestock Officer*: pasture utilization (sheep)
 J. P. Drinan, B.Rur.Sc., *Livestock Officer*: reproduction in Merino flocks
 J. R. Giles, B.Sc. (W.T.), *Livestock Officer*: comparison of Merino strains
 B. A. Hamilton, B.Sc. (W.T.), *Livestock Officer*: pasture utilization (sheep)
 B. J. McGuirk, B.Sc. (W.T.), *Livestock Officer*: sheep breeding—selection barriers
 W. A. Pattie, B.Sc. (W.T.), *Livestock Officer*: single character selection flocks
 G. R. Peart, B.Rur.Sc., *Agronomist*: pastures
 G. E. Robards, B.Sc. (W.T.), *Livestock Officer*: pasture utilization—Merino sheep
 A. J. Williams, B.Sc.Agr., *Wool Biologist*: efficiency of wool growth

(t) **WOLLONGBAR AGRICULTURAL RESEARCH STATION, Wollongbar, N.S.W.**
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 G. E. Bird, B.Sc.Agr., *Economics Research Officer*: farm management
 R. L. Colman, M.Sc.Agr., *Senior Agronomist*: pastures
 C. A. Fleming, B.Sc.Agr., *Agronomist*: pastures
 J. M. Holder, B.V.Sc., *Veterinary Officer*: dairy cattle and pig nutrition
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8. Hawkesbury Agricultural College

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 S. G. Grimmett, B.Agr.Sc., *Senior Agronomist*: pastures
 A. W. Hudson, B.Sc. (Wales), *Senior Agronomist*: plant nutrition
 P. F. Rylands, B.Sc.Agr., *Agronomist*: weeds

(b) **SCHOOL OF DAIRY TECHNOLOGY**

- G. J. F. Smith, B.Sc.Agr., Ph.D. (Calif.), *Principal Dairy Officer*: Supervisor, School of Dairy Technology
 S. R. Bakalor, D.Sc.Agr. (Pret.), *Special Dairy Officer*: dairy products
 D. Lostia, D.Sc.Agr. (Perugia), *Dairy Officer*: dairy husbandry
 Miss C. Lyford, B.Sc., *Dairy Officer*: dairy products
 Miss M. Plunkett, B.Sc.Agr., *Dairy Officer*: milking research
 A. Twomey, B.Rur.Sc., *Dairy Officer*: dairy husbandry

(c) **OTHER**

- J. W. Akers, B.Sc.Agr., Q.D.A., *Lecturer*: food microbiology
 W. A. Barr, A.S.T.C., A.I.M.E., A.M.I.R., *Lecturer*: agricultural engineering, spray irrigation
 J. H. Burden, B.Sc., *Lecturer*: entomological morphology and systematics
 N. A. Cutts, H.D.A., *Livestock Officer (Bees)*: artificial insemination
 A. Dowey, B.Sc., *Lecturer*: food technology
 J. A. Holbeche, H.D.A., *Special Fruit Officer*: stone fruit

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D. G. Lundie-Jenkins, W.D.A., *Livestock Officer (Sheep)*: sheep fertility and pasture utilization

M. K. Maxwell, B.Sc.Agr., Dip.Ed., *Lecturer*: botanical cytology

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9. Wagga Agricultural College

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10. Wagga Agricultural Research Institute

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E. G. Cuthbertson, B.Sc.Agr., *Senior Research Officer*: weeds, pastures

R. D. Fitzgerald, B.Sc.Agr., *Research Officer*: pasture utilization

G. M. Halloran, B.Sc.Agr., *Senior Research Officer*: cytogenetics

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A. N. Smith, M.Sc. (Dunelm), *Senior Research Officer*: soil fertility

T. B. Spence, B.Sc. (Rand), *Research Officer*: soil fertility

R. R. Storrier, B.Sc.Agr., Ph.D. (Lond.), *Senior Research Officer*: soil nitrogen

J. R. Syme, B.Sc.Agr., Ph.D., *Research Officer*: wheat breeding

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11. Yanco Agricultural College & Research Station

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H. D. R. Malcolm, M.Sc., *Fruit Officer*: pome and stone fruits

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J. Sumeghy, B.Sc.Agr. (Bud.), *Senior Agronomist*: vegetable breeding

D. J. Swain, B.Sc.Agr., *Agronomist*: weeds

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COMMONWEALTH OF AUSTRALIA

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- (g) NORTH COAST SOIL CONSERVATION DISTRICT, P.O. Box 177, Kempsey. Tel.: 3765
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- (h) RIVERINA SOIL CONSERVATION DISTRICT, P.O. Box 10, Wagga Wagga. Tel.: 4304
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- (j) UPPER MACQUARIE SOIL CONSERVATION DISTRICT, P.O. Box 308, Orange. Tel.: 4946
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- (n) HAY
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5. Water Conservation and Irrigation Commission

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(e) SECTIONS

(i) *Anatomy and Histology*

M. H. Blunt, Ph.D., M.R.C.V.S., *Senior Lecturer*

(ii) *Biometry*

Vacant

(iii) *Genetics*

S. K. Stephenson, M.Sc., Ph.D., *Associate Professor*

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(iv) *Microbiology*

J. B. Kwapinski, M.D., C.Sc., *Senior Lecturer*

(v) *Parasitology*

K. M. Dash, B.V.Sc., *Lecturer*

(vi) *Preventive Medicine*

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Miss Nola J. Hannon, B.Sc., Ph.D., *Senior Lecturer*: nitrogen economy of natural plant communities; studies in estuarine halophytic communities

Miss Mary M. Hindmarsh, B.Sc., Ph.D., *Senior Lecturer*: sub-microscopic structure of cells

M. J. K. Macey, B.Sc., M.Sc., *Lecturer*: chemistry and genetics of cuticle waxes

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C. J. Quinn, B.Sc.Hons., Ph.D., *Lecturer*: wheat cytogenetics; embryogeny of the *Podocarpaceae*

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H. J. Willetts, B.Sc.Hons., M.Sc., *Lecturer*: brown rot of fruits; root-knot nematodes on agricultural crops

A. E. Wood, B.Sc.Agr., Ph.D., *Lecturer*: fungal systematics, particularly of basidiomycetes; growth and differentiation of fungal cells and fruit bodies

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J. P. Kennedy, B.Sc., M.Sc., M.A.I.A.S., *Lecturer*

J. D. McFarlane, B.Sc.Agr., Dip.Ed., M.Sc., M.A.I.A.S., *Lecturer*

W. R. McManus, B.Sc.Agr., Ph.D., M.A.I.A.S., *Senior Lecturer*

E. M. Roberts, M.Agr.Sc., Ph.D., M.A.I.A.S., *Senior Lecturer*

K. J. Whiteley, Ph.D., B.Sc., M.A.I.A.S., *Senior Lecturer*

E. UNIVERSITY OF SYDNEY**1. Faculty of Agriculture**

Sydney. Tel.: 68 0522

I. A. Watson, Ph.D. (Minn.), B.Sc.Agr., *Professor of Agriculture and Dean of the Faculty of Agriculture*

(a) DEPARTMENT OF AGRICULTURAL BOTANY

I. A. Watson, Ph.D. (Minn.), B.Sc.Agr., *Professor and Head of the Department*

(i) Agricultural Botany (Plant Breeding)

I. A. Watson, Ph.D. (Minn.), B.Sc.Agr., *Professor*

E. P. Baker, Ph.D. (Calif.), B.Sc.Agr., *Senior Lecturer*

K. S. McWhirter, Ph.D. (Wis.), B.Sc.Agr., *Senior Lecturer*

(ii) Agricultural Entomology

Vacant: *Senior Lecturer*

(iii) Biometry

L. N. Balaam, B.Sc. (Q'ld.), M.Sc., *Senior Lecturer*

J. Robinson, B.Sc. (Q'ld.), *Lecturer*

(iv) Plant Pathology

N. H. White, D.Sc. (Tas.), M.Sc., *Associate Professor*

D. M. Griffin, M.A., Ph.D. (Cantab.), *Senior Lecturer*

C. D. Blake, Ph.D. (Lond.), B.Sc.Agr., *Lecturer*

(b) DEPARTMENT OF AGRICULTURAL CHEMISTRY

J. F. Turner, Ph.D. (Cantab.), M.Sc., *Professor and Head of Department*

H. H. Bauer, Ph.D., M.Sc., *Senior Lecturer*

S. Hacopian, Ph.D., M.Sc., A.R.A.I.C., *Senior Lecturer*

N. K. Mathieson, Ph.D. (Edin.), M.Sc., *Senior Lecturer*

H. L. Webster, Ph.D. (Cantab.), B.Sc., *Senior Lecturer*

(c) DEPARTMENT OF AGRICULTURAL ECONOMICS

K. O. Campbell, A.M., Ph.D. (Chic.), M.P.A. (Harv.), B.Sc.Agr., *Professor and Head of Department*

B. R. Davidson, Ph.D. (Lond.), M.Agr.Sc. (Melb.), *Senior Lecturer*

J. W. Longworth, B.Sc.Agr., *Lecturer*

(d) DEPARTMENT OF AGRICULTURAL MICROBIOLOGY

Vacant: *Professor*

J. M. Vincent, D.Sc.Agr. (Syd.), Dip.Bact. (Lond.), *Associate Professor*

P. H. Grahon, Ph.D. (W.A.), B.Sc.Agr. (W.A.), *Lecturer*

Y. T. Tohan, D.es.Sc. (Paris), *Reader in Agricultural Microbiology and Linnean Macleay Lecturer in Microbiology*

COMMONWEALTH OF AUSTRALIA

(e) DEPARTMENT OF AGRONOMY

Vacant: *Professor*

O. G. Carter, Ph.D., M.S. (Corn.), B.Sc.Agr., *Lecturer*

F. C. Crofts, M.S. (Ore.), B.Sc.Agr., *Senior Lecturer*

D. L. Jackson, B.Sc.Agr., *Senior Lecturer*

F. C. McMullen, M.Sc.Agr., *Lecturer*

(f) DEPARTMENT OF ANIMAL HUSBANDRY

T. J. Robinson, Ph.D. (Cantab.), M.Sc.Agr., *Professor of Animal Husbandry*

(i) *Headquarters of Department*

Sydney. Tel.: 68 0522

Animal Husbandry

J. N. Shelton, Ph.D., B.V.Sc., *Senior Lecturer in Animal Husbandry: animal reproduction*

S. Salamon, Ph.D., B.Sc.Agr. (Bud.), Cand.Agr. (Moscow), M.Agr.Sc., *Research Fellow: physiology of reproduction*

Animal Genetics

J. S. F. Barker, Ph.D., B.Agr.Sc., *Associate Professor in Animal Genetics: population and dairy cattle genetics*

Animal Nutrition

D. M. Walker, Ph.D., M.Sc., N.D.A., *Reader in Animal Nutrition: ruminant nutrition*

K. T. Jagusch, M.Agr.Sc. (N.Z.), *Teaching Fellow*

(ii) *Animal Husbandry Farms*

Camden. Tel.: Camden 6 9287

H. J. Geddes, M.Sc.Agr. (N.Z.), *Associate Professor, Director of Animal Husbandry Farms: dairy production*

R. K. Ryan, Ph.D., M.V.Sc., *Senior Lecturer in Animal Husbandry: rumen physiology*

Dairy Foundation Research Unit

Tel.: Camden 6 9286

A. K. Lascelles, Ph.D., M.V.Sc., *Professor of Dairying: lactation physiology; milking machines*

M.C. Franklin Laboratory

Tel.: Camden 6 9285

I. D. Wardrop, Ph.D., B.Agr.Sc. (Melb.), *William McIlrath Fellow and Senior Lecturer in Animal Husbandry: beef cattle production*

Miss Jane Leibholz, Ph.D., B.Agr.Sc. (Melb.), *Lecturer: animal nutrition*

C. F. Cook, Ph.D., M.S. (Wis.), *Research Fellow: meat science*

Poultry Foundation Research Unit

Tel.: Camden 6 9285

H. W. McNary, Ph.D., M.S. (Purdue), *Director of Poultry Husbandry: poultry genetics*

Sheep and Wool Research Unit

Tel.: Mt. Hunter 229

D. R. Lindsay, Ph.D., B.Sc.Agr., *Research Fellow: physiology of reproduction*

(iii) *McCaughy Memorial Institute*

Jerilderie. Tel.: Jerilderie 191D

N. W. Moore, Ph.D. (Cantab.), M.Agr.Sc. (Melb.), *Senior Lecturer in Animal Husbandry: sheep husbandry; physiology of reproduction*

(g) DEPARTMENT OF SOIL SCIENCE

N. Collis-George, Ph.D. (Cantab.), M.Sc. (Manc.), *Professor and Head of Department*

B. G. Davey, Ph.D. (Aberd.), B.Sc.Agr., *Senior Lecturer*

D. E. Smiles, Ph.D., B.Sc.Agr., *Lecturer*

2. School of Biological Sciences

Sydney. Tel.: 68 0522

S. Smith-White, D.Sc.Agr., F.A.A., *Professor and Head of the School of Biological Sciences*L. C. Birch, D.Sc., B.Agr.Sc., F.A.A., *Challis Professor of Biology*D. A. Adamson, Ph.D., B.Sc.Agr., *Lecturer*D. J. Anderson, Ph.D., *Senior Lecturer*Miss Ilma M. Brewer, D.Sc., *Lecturer*R. C. Carolin, B.Sc., Ph.D., *Senior Lecturer*W. H. I. Dawbin, M.Sc. (N.Z.), D.Sc., *Senior Lecturer*K. P. Lamb, Ph.D., M.Sc., *Senior Lecturer*M. P. Marsh, M.A., Ph.D. (Calif.), A.B. (Fresno State College), *Lecturer*A. R. H. Martin, M.A., Ph.D., *Senior Lecturer*P. M. Martin, M.Sc.Agr., Dip.Ed., *Lecturer*I. V. Newman, Ph.D., M.Sc., F.R.M.S., F.L.S., *Senior Lecturer*R. J. Oldfield, B.Sc., *Lecturer*A. A. Racek, Dr. rer.Nat. (Masaryk, Brno), *Senior Lecturer*P. G. Valder, Ph.D., B.Sc.Agr., *Senior Lecturer*D. C. Wildon, B.Sc.Agr., *Lecturer***3. Department of Veterinary Medicine**

Private Bag, P.O., Camden, N.S.W. Tel.: 68 800

D. McFarlane, B.Sc. (Glas.), M.R.C.V.S., *Professor of Veterinary Medicine*M. J. Edwards, B.V.Sc., M.V.Sc. (Liv.), *Senior Lecturer in Dairying Medicine*W. J. Hartley, M.R.C.V.S., *Senior Lecturer in Preventive Medicine*K. G. Haughey, B.V.Sc. (Syd.), *Senior Lecturer in Pastoral Medicine*D. R. Hutchins, B.V.Sc. (Syd.), *Superintendent, Rural Veterinary Centre*J. M. Keep, B.V.Sc. (Syd.), *Superintendent, Veterinary Hospital and Clinic*T. J. McClure, B.V.Sc. (Syd.), *Senior Lecturer in Dairying Medicine*Miss V. E. Osborne, B.V.Sc. (Syd.), *Senior Lecturer in Veterinary Anatomy*B. Sinkovic, D.V.M. (Giessen), *Lecturer in Diseases of Poultry*R. M. Webb, B.V.Sc. (Syd.), *Senior Lecturer in Veterinary Anatomy***4. Department of Veterinary Pathology and Bacteriology**

Tel.: 68 0522

C. H. Gallagher, D.V.Sc., Ph.D., *Professor of Veterinary Pathology and Bacteriology: biochemical basis of nutritional and toxicological diseases of liver and central nervous system*R. V. S. Bain, B.V.Sc., M.Sc., *Associate Professor of Veterinary Bacteriology: immunology of *Pasteurella multocida**W. E. Lawrence, B.V.Sc., M.R.C.V.S., *Senior Lecturer in Veterinary Bacteriology: immunity in relation to reproduction in ruminants*L. N. Loomis, D.V.M., M.S. (Mich.), *Senior Lecturer in Veterinary Pathology: comparative studies on leucaemia***5. Department of Veterinary Physiology**

Sydney, N.S.W. Tel.: 68 0522

C. W. Emmens, D.Sc., Ph.D. (Lond.), F.S.S., F.I.Biol., F.A.A., *Professor*D. J. Collins, M.Sc., Ph.D., *Senior Research Fellow*J. J. Hobbs, M.Sc., Ph.D., *Senior Research Fellow*I. C. A. Martin, B.V.Sc., Ph.D., *Senior Lecturer*R. G. Wales, B.V.Sc., Ph.D., *Senior Lecturer*I. G. White, D.Sc., Ph.D., *Reader*

COMMONWEALTH OF AUSTRALIA

F. AUSTRALIAN MUSEUM

6-8 College Street, Sydney, N.S.W. Tel.: 26 6954. Cables: Museum, Sydney

F. H. Talbot, M.Sc., Ph.D., *Director*
H. O. Fletcher, M.Sc., *Deputy Director*
H. G. Cogger, M.Sc., *Curator of Reptiles and Amphibians*
H. J. de S. Disney, M.A., *Curator of Birds*
D. K. McAlpine, M.Sc., *Assistant Curator of Insects*
D. F. McMichael, M.A., Ph.D., *Curator of Molluscs*
B. J. Marlow, B.Sc., *Curator of Mammals*
D. R. Moore, M.A., *Curator of Anthropology*
Miss Elizabeth C. Pope, M.Sc., *Curator of Worms and Echinoderms*
C. N. Smithers, M.Sc., *Curator of Insects*
J. C. Yaldwyn, M.Sc., Ph.D., *Curator of Crustacea*

G. MUSEUM OF APPLIED ARTS AND SCIENCES

Harris Street, Broadway, Sydney, N.S.W. Tel.: 211 3911

J. L. Willis, M.Sc., *Director*: botany of Australian essential oil flora
H. H. G. McKern, M.Sc., *Deputy Director*: chemistry of Australian essential oils

1. Botanical Section

B. E. J. Small, B.Sc.For., M.Sc., *Research Officer*: physiological aspects of Australian essential oil-bearing flora

2. Chemical Section

R. O. Hellyer, M.Sc., *Senior Chemist*: chemistry of Australian essential oils
E. V. Lassak, B.Sc., *Chemist*: chemistry of Australian essential oils

QUEENSLAND

A. DEPARTMENT OF FORESTRY

108 George Street, Brisbane (P.O. Box 37, Brisbane, North Quay) Tel.: 2 2133. Cables: Forestry, Brisbane

A. R. Trist, M.F. (Yale), B.Sc., Dip.For., *Conservator*
L. J. Rogers, Dip.For., *Deputy Conservator*

1. Entomology and Pathology Section

N. W. Heather, B.Sc., Q.D.A., *Research Entomologist*: forest entomology research
B. N. Brown, B.Agr.Sc., *Pathologist*: forest pathology research

2. Forest Products Research Branch

T. F. Ryley, B.Sc.For., Dip.For., *Officer-in-Charge*, Forest Products Research
K. V. Cokley, B.Sc., A.R.A.C.I., *Officer-in-Charge*, Wood Chemistry and Preservation
J. W. Alcock, B.Sc.For., *Forester*
R. J. Gould, B.Sc.For. (Aberd.), *Forester*: forest products research, North Queensland
J. D. K. Schmidt, B.Sc., *Timber Technologist*
W. J. Smith, A.I.W.Sc., *Senior Timber Technician*
C. J. J. Watson, *Investigations Officer*

3. Silvicultural Section*Brisbane*

- H. E. Volck, M.Sc.For., Dip.For., *Senior Research Officer*: Queensland trees and *Pinus* species
 N. B. Henry, B.Sc.For., Dip.For., *Research Forester*: hardwoods, arboricides, weedicides, mensuration
 J. W. Moore, B.Sc., *Biometrician*

Atherton

- A. C. van Altena, Dip.For., *Forester*: tropical rain forests, North Queensland
 D. A. Gilmour, M.Sc.For., Dip.For., *Forester*: hydrological research in tropical regions
 B. P. M. Hyland, B.Sc.For., Dip.For., *Forester*: tropical rain forests, North Queensland

Beerwah

- D. G. Nikles, B.Sc.For., Dip.For., *Forester*: O/C tree breeding—(at present overseas engaged on tree breeding—*P. caribaea*)
 M. U. Slee, M.A.For. (Oxon.), *Forester*: tree breeding (*P. elliottii*, *P. radiata*, *P. caribaea*)
 D. I. Bevege, B.Sc.For., Dip.For., *Forester*: nutrition of *P. taeda*, *P. elliottii* and hoop pine
 M. J. Finch, B.Sc. (Manc.), *Soils Chemist*
 D. Jermyn, B.Sc.For., Dip.For., *Forester*: exotic conifers (*Pinus* species)
 R. E. Pegg, M.Sc.For., Dip.For., *Forester*: soil growth relationships *P. elliottii*

Dalby

- P. J. Hawkins, B.Sc.For., Dip.For., *Forester*: cypress pine, western hardwoods and shade trees
 J. M. deZwart, B.Sc.For., Dip.For., *Forester*: southern rain forests

Imbil

- J. B. A. Schaumberg, B.Sc.For., Dip.For., *Forester*: hoop pine and associated species
 J. J. Reilly, B.Sc.For., Dip.For., *Forester*: tree breeding (hoop pine)

Yarraman

- P. A. Armstrong, B.Sc.For., Dip.For., *Forester*: hoop pine and associated species

B. DEPARTMENT OF LANDS**Biological Section, Sherwood Laboratory**

Sherwood, Brisbane. Tel.: 79 1321

- J. Mann, *Director*: biological and chemical control of weeds
 G. Diatloff, B.Sc.Agr., *Investigation Officer*: chemical control of weeds and ecology of weeds
 W. H. Haseler, M.Sc., *Investigation Officer*: biological control of weeds
 A. R. Taylor, H.D.A., *Senior Investigation Officer*: biological and chemical control of weeds

C. DEPARTMENT OF PRIMARY INDUSTRIES

William Street, Brisbane. Tel.: 33 9011 Cables: Agriculture, Brisbane

- J. M. Harvey, D.Sc., *Director-General of Primary Industries*
 A. A. Ross, M.Sc.Agr., Q.D.A., *Deputy Director-General*

BIOMETRY BRANCH

- P. B. McGovern, M.A., B.Sc., *Chief Biometrician*
 G. Clark, B.Sc., *Biometrician*

COMMONWEALTH OF AUSTRALIA

Miss E. A. Goward, B.A., *Biometrician*
Miss P. M. Pepper, B.Sc., *Biometrician*
Miss J. A. Tommerup, B.Sc., B.Econ., *Biometrician*

1. Division of Animal Industry

(a) DIVISIONAL HEADQUARTERS

William Street, Brisbane. Tel.: 33 9011

A. L. Clay, B.V.Sc., *Director, Division of Animal Industry*
C. R. Mulhearn, B.V.Sc., *Deputy Director, Division of Animal Industry*
O. H. Brooks, B.V.Sc., *Assistant to Director, Division of Animal Industry*

(b) CATTLE HUSBANDRY BRANCH

William Street, Brisbane. Tel.: 33 9011

G. I. Alexander, B.V.Sc., M.Sc., Ph.D., *Director of Cattle Husbandry*
G. J. Armstrong, B.V.Sc., *Husbandry Officer: reproduction studies beef and dairy cattle*
N. C. E. Barr, B.V.Sc., *Senior Husbandry Officer: reproduction studies beef and dairy cattle*
I. H. G. Rayner, B.Econ., *Livestock Economist: economics of beef and dairy cattle production*
J. G. Young, B.Agr.Sc., *Senior Husbandry Officer: dairy cattle nutrition*

Ayr, Cattle Field Station

I. J. R. Byford, B.Sc.Agr., *Husbandry Officer: dairy cattle nutrition*
P. N. Thurbon, B.Agr.Sc., *Husbandry Officer: nutritional studies of cattle*
L. Winks, B.Agr.Sc., *Husbandry Officer: beef cattle nutrition*

Gayndah, "Brian Pastures", Pasture Research Station

W. P. Bewg, B.Sc.Agr., *Husbandry Officer: reproductive and nutritional studies beef cattle*

Millaroo, "Swan's Lagoon" Cattle Field Station

A. W. Plasto, B.Sc.Agr., *Husbandry Officer: nutritional studies beef cattle*

Toowoomba

K. J. Rowan, B.V.Sc., *Husbandry Officer: reproductive and nutritional studies beef and dairy cattle*

(c) SLAUGHTERING AND MEAT INSPECTION BRANCH

William Street, Brisbane. Tel.: 33 9011

B. Parkinson, B.V.Sc., *Director of Meat Control: meat technology*
N. J. D. Henderson, M.R.C.V.S., *Veterinary Officer: meat technology*

(d) PIG AND POULTRY BRANCH

William Street, Brisbane. Tel.: 33 9011

Vacant: *Director, Pig and Poultry Branch*

F. Bostock, H.D.A., *Senior Husbandry Officer (Pigs): pig nutrition*
F. N. J. Milne, B.Sc., *Senior Husbandry Officer (Poultry): poultry nutrition*
A. C. E. Todd, B.Sc.Agr., *Husbandry Officer: nutrition and housing of pigs*

(e) SHEEP AND WOOL BRANCH

William Street, Brisbane. Tel.: 33 9011

A. T. Bell, B.V.Sc., *Director of Sheep Husbandry: sheep infertility*
J. Gibb, B.V.Sc., *Senior Husbandry Officer: sheep nutrition*
M. D. Richards, Dip.Ind.Chem., *Asst. Wool Technologist: wool wax content*

Cunnamulla

P. S. Hopkins, B.V.Sc., *Husbandry Officer*: drought feeding sheep

Julia Creek, "Toorak" Sheep Field Research Station

K. W. Entwistle, B.V.Sc., *Husbandry Officer*: male sheep fertility

Richmond

R. M. Murray, B.V.Sc., *Husbandry Officer*: drought feeding and sheep nutrition studies

Roma

A.T.A. Healy, B.Rur.Sc., *Husbandry Officer*: sheep nutrition

(f) VETERINARY SERVICES BRANCH

William Street, Brisbane. Tel.: 33 9011

L. G. Newton, B.V.Sc., *Director of Veterinary Services*: cattle tick; bovine contagious pleuropneumonia

K. M. Grant, B.V.Sc., *Asst. Director of Veterinary Services*: infertility of cattle; diseases of dairy cattle

G. S. Barnett, B.V.Sc., *Veterinary Officer*: diseases livestock

J. W. Evans, B.V.Sc., *Divisional Veterinary Officer (Poultry Diseases)*: poultry diseases

K. B. Hale, B.V.Sc., *Divisional Veterinary Officer*: diseases livestock

P. W. Ladds, B.V.Sc., *Veterinary Officer*: bovine contagious pleuropneumonia

Atherton

P. M. Darvall, B.V.Sc., *Veterinary Officer*: diseases livestock

Biloela

P. R. Beiers, B.V.Sc., *Veterinary Officer*: diseases livestock

Cairns

G. Leatch, B.V.Sc., *Divisional Veterinary Officer*: diseases livestock

Charleville

W. J. G. Martin, B.V.Sc., *Veterinary Officer*: diseases livestock

Chinchilla

D. C. Clague, B.V.Sc., *Veterinary Officer*: diseases livestock

Cloncurry

P. C. Derrington, B.V.Sc., *Veterinary Officer*: diseases livestock

Emerald

R. J. Higgins, B.V.Sc., *Veterinary Officer*: diseases livestock

Gayndah

D. B. Copeman, B.V.Sc., *Veterinary Officer*: diseases livestock

Kingaroy

R. J. Dalglish, B.V.Sc., *Veterinary Officer*: diseases livestock

Longreach

B. M. O'Sullivan, B.V.Sc., *Veterinary Officer*: diseases livestock

Maryborough

S. G. Knott, B.V.Sc., *Divisional Veterinary Officer*: diseases livestock

A. Naprasnik, B.V.Sc., *Veterinary Officer*: diseases livestock

Rockhampton

B. A. Woolcock, B.V.Sc., *Divisional Veterinary Officer*: diseases livestock

Roma

D. J. Webster, B.V.Sc., *Divisional Veterinary Officer*: diseases livestock

Thursday Island

H. R. Christensen, B.V.Sc., *Veterinary Officer*: diseases livestock

COMMONWEALTH OF AUSTRALIA

Toowoomba

J. L. Stenhouse, B.V.Sc., *Veterinary Officer*: diseases livestock

R. S. Stranger, B.V.Sc., *Divisional Veterinary Officer*: diseases livestock

Townsville

C. P. Craven, B.V.Sc., *Divisional Veterinary Officer*: diseases livestock

J. C. Sewell, B.C.Sc., *Veterinary Officer*: diseases livestock

(g) ANIMAL RESEARCH INSTITUTE

Fairfield Road, Yeerongpilly, Brisbane. Tel.: 48 5151

J. W. Ryley, B.V.Sc., *Director of Veterinary Research*

(h) ANIMAL HUSBANDRY RESEARCH BRANCH

Animal Research Institute, Fairfield Road, Yeerongpilly, Brisbane. Tel.: 48 5151

J. G. Morris, B.Sc., M.Agr.Sc., Ph.D., *Director of Husbandry Research*: ruminant nutrition studies

R. M. Beames, M.Agr.Sc., Ph.D., *Senior Husbandry Officer*: porcine nutrition

J. K. Connor, B.Agr.Sc., *Husbandry Officer*: poultry nutrition

J. Edmunds, B.Sc.Agr., *Husbandry Officer*: artificial insemination

M. J. Josey, B.V.Sc., *Husbandry Officer*: artificial insemination

J. L. Lamberth, B.V.Sc., *Husbandry Officer*: ruminant nutrition

C. P. McPhee, M.Agr.Sc., *Husbandry Officer*: genetics and animal behaviour

E. F. Singleton, B.V.Sc., *Officer-in-Charge, A.I. Centre, Wacol*: artificial insemination

G. L. Strachan, B.Sc., *Husbandry Officer*: physiology of ruminants

(i) BIOCHEMICAL BRANCH

Animal Research Institute, Fairfield Road, Yeerongpilly, Brisbane. Tel.: 48 5151

C. W. R. McCray, B.Sc., A.R.A.C.I., *Biochemist*: poison plants, toxicology of heavy metals; acaracides

R. J. W. Gartner, B.Sc., A.R.A.C.I., *Senior Chemist (Clinical Biochemistry)*: biochemical changes associated with clinical disorders of livestock

J. A. Hinds, B.Sc., *Chemist*: clinical biochemistry of livestock

I. S. Hurwood, B.Sc., A.R.A.C.I., *Chemist*: poisons in livestock; insecticidal residues in livestock

G. J. Leonard, M.Sc., *Chemist*: poison plant toxins of biological origin

M. S. Levitt, B.Sc., *Chemist*: grass and crop silages

T. McEwan, M.Sc., A.R.A.C.I., *Senior Toxicologist*: toxic principles in some poison plants; acaracides

K. W. Moir, B.Sc., A.R.A.C.I., *Senior Chemist (Nutritional Biochemistry)*: fodder evaluation, nutrition of grazing animals

A. R. Neill, B.Sc., *Chemist*: nutritional studies of livestock

P. B. Oelrichs, M.Sc., A.R.A.C.I., *Chemist*: toxic principles in some poison plants

E. Payne, B.Sc., *Chemist*: ruminant metabolism

(j) PATHOLOGY BRANCH

Animal Research Institute, Fairfield Road, Yeerongpilly, Brisbane. Tel.: 48 5151

W. T. K. Hall, B.V.Sc., *Director, Pathology Branch*: diseases of cattle

L. Tammemagi, B.V.Sc., Dr.Med.Vet., *Chief Veterinary Pathologist*: tick fever immunity in cattle

I. D. Baynes, B.V.Sc., *Veterinary Officer*: diseases of pigs

L. L. Callow, B.V.Sc., Ph.D., *Senior Protozoologist*: tick fevers of cattle

COMMONWEALTH OF AUSTRALIA

- P. C. Doherty, B.V.Sc., *Veterinary Officer*: virology of animal diseases
Miss J. K. Elder, B.Sc., *Bacteriologist*: bacteriology of animal diseases
Mrs. C. K. Granzien, B.Sc., *Haematologist*: haematology
L. Laws, M.V.Sc., *Senior Veterinary Pathologist*: diseases of sheep
Miss M. H. Lucas, B.V.Sc., *Bacteriologist*: bacteriology of animal diseases
C. G. Ludford, B.Sc., *Senior Serologist*: serology of cattle and sheep diseases
Miss H. L. McDougall, B.Agr.Sc., *Serologist*: serology of animal diseases
M. D. McGavin, M.V.Sc., Ph.D., *Senior Histopathologist*: histopathology of nervous diseases of animals
Miss P. M. Netterfield, B.Sc., *Bacteriologist*: bacteriology of animal diseases
P. J. O'Sullivan, B.Agr.Sc., *Senior Parasitologist*: tick fever of cattle; sheep blowfly control
R. J. Rogers, B.V.Sc., *Veterinary Officer*: diseases of cattle
G. C. Simmons, B.Sc., *Chief Microbiologist*: bacteriology of animal diseases
N. D. Sullivan, B.V.Sc., *Veterinary Officer*: leptospirosis

Oonoonba Animal Health Station

- Vacant: *Officer-in-Charge*: tick fever immunity in cattle; plant poisoning
M. D. Connole, B.Sc., *Bacteriologist*: fungal diseases of animals
M. W. M. Hill, B.V.Sc., *Veterinary Officer*: diseases and plant poisoning of animals

2. Division of Dairying

(a) DIVISIONAL HEADQUARTERS

William Street, Brisbane. Tel: 33 9011

E. B. Rice, Dip.Ind.Chem., M.I.Biol., *Director of Dairying*

(b) DAIRY RESEARCH BRANCH

William Street, Brisbane. Tel: 33 9011

V. R. Smythe, M.Agr.Sc., Q.D.A., *Director of Research*

W. A. Allan, B.Agr.Sc., *Bacteriologist*: biochemistry and antibiotics in dairy products

J. D. Armitt, Q.D.D.M., *Experimentalist*: dairy technology

Miss C. I. Curtis, Dip.Ind.Chem., A.R.A.C.I., *Chemist*: chemistry of dairy products

M. B. Ferricks, B.Sc., A.R.A.C.I., *Chemist*: pesticides in dairy products, chemistry of dairy products

F. G. Few, B.Sc., B.Sc.App., *Senior Chemist*: dairy chemistry

Miss A. J. Gillies, M.Sc.App., *Special Bacteriologist*: bacteriology of butter, cream and market milk

Miss L. G. Lightbody, M.Sc., *Special Bacteriologist*: bacteriology of butter, cream and market milk

Miss P. C. Loane, B.Sc., *Dairy Technologist*: bacteriology of milk

W. C. T. Major, B.Agr.Sc., A.S.B.M., *Senior Bacteriologist*: dairy bacteriology and technology

G. W. O'Donnell, M.Sc., A.R.A.C.I., *Chemist*: chemistry of dairy products

R. J. Park, M.Sc., Dip.Ind.Chem., A.R.A.C.I., *Research Chemist*: chemistry of dairy products

M. G. Smith, B.Sc., *Bacteriologist*: bacteriological aspects of dairy hygiene

Malanda

V. C. Tucker, Dip.Ind.Chem., A.R.A.C.I., *Chemist*: chemistry of dairy products

Murgon

D. Fouras, B.Sc., *Chemist*: bacteriology of dairy products

COMMONWEALTH OF AUSTRALIA

Toowoomba

T. W. Dommett, B.Sc., *Bacteriologist*: bacteriology of dairy products

A. Lyall, B.Sc., *Chemist*: chemistry of dairy products

T. A. Morris, B.Agr.Sc., *Senior Dairy Technologist*: cheese technology

(c) FIELD SERVICES BRANCH

William Street, Brisbane. Tel.: 33 9011

W. D. Mitchell, B.Agr.Sc., Dip.Agr.Ext., *Director of Field Services*

C. H. Clark, B.Agr.Sc., *Technologist*: surveys of herd production and sire surveys

R. V. Collard, B.Agr.Sc., *Dairy Technologist*: technology of dairy products

G. G. Crittall, Dip.Ind.Chem., A.R.A.C.I., *Senior Dairy Technologist*: butter technology and new dairy foods

Miss F. H. Lovejoy, B.Sc., *Dairy Technologist*: surveys of herd recording data

I. J. McKenzie, B.Agr.Sc., Q.D.A., *Dairy Technologist*: technology of dairy products

R. J. Messer, B.Agr.Sc., *Dairy Technologist*: abnormal milk studies

J. G. Miller, B.Agr.Sc., Q.D.D.M., *Dairy Technologist*: technology of dairy products

S. E. Pegg, Q.D.A., *Chief Adviser, Herd Recording*: surveys of herd recording data

Miss D. K. Tuckett, B.Sc., *Dairy Technologist*: surveys of herd recording data

3. Division of Development Planning and Soil Conservation

(a) DIVISIONAL HEADQUARTERS

William Street, Brisbane. Tel.: 33 9011

J. E. Ladewig, B.Agr.Sc., Q.D.A., *Director, Division of Development Planning and Soil Conservation*

(b) DEVELOPMENT PLANNING BRANCH

William Street, Brisbane. Tel.: 33 9011

A. J. Hegarty, B.Sc., Q.D.A., *Chief Development Planning Officer*

N. M. Dawson, B.Agr.Sc., *Agronomist*

W. Mawson, B.Econ., H.D.A., *Asst. Technical Administration Officer*

(c) SOIL CONSERVATION BRANCH

William Street, Brisbane. Tel.: 33 9011

J. Rosser, B.Agr.Sc., Q.D.A., *Chief Soil Conservationist*

H. S. Briggs, B.Agr.Sc., *Soil Conservationist*: soil conservation research

W. Eastgate, B.E., *Engineer*

H. W. Pauli, B.Agr.Sc., *Soil Conservationist*

Toowoomba

A. F. Skinner, Q.D.A., *Senior Soil Conservationist*: soil conservation mapping and planning

G. L. Swartz, B.Agr.Sc., *Soil Conservationist*: soil conservation research

4. Division of Marketing

William Street, Brisbane. Tel.: 33 9011

(a) DIVISIONAL HEADQUARTERS

Vacant: *Director of Marketing*, Brisbane

D. P. Lapidge, B.Com., A.A.U.Q., *Assistant Director of Marketing*, Brisbane

(b) ECONOMICS RESEARCH BRANCH

E. O. Burns, B.Com., A.C.A.A., A.A.S.A., *Director of Economic Services*, Brisbane

- C. W. Becconsall, B.Com., *Agricultural Economist*, Toowoomba
 J. E. Briggs, B.Agr.Sc., *Agricultural Economist*, Gympie
 R. B. Bygott, *Experimentalist*, Brisbane
 P. A. Cassidy, B.Agr.Sc., Q.D.A., *Agricultural Economist*, Brisbane
 K. J. Down, B.Econ., *Agricultural Economist*, Brisbane
 J. Van Haeringen, B.Econ., Dip.Trop.Agr., *Agricultural Economist*, Brisbane
 R. B. Hall, B.Sc.Hort., N.D.H., *Agricultural Economist*, Brisbane
 C. P. Hamilton, B.Agr.Sc., Q.D.A.H., *Agricultural Economist*, Brisbane
 S. R. Harrison, B.Agr.Sc., Q.D.A., *Agricultural Economist*, Brisbane
 W. Moorhouse, B.Com., A.A.U.Q., A.A.S.A., *Agricultural Economist*, Brisbane
 R. G. Nimmo, B.Agr.Sc., *Agricultural Economist*, Atherton
 A. L. O'Neil, B.Com., A.A.U.Q., *Senior Agricultural Economist*, Brisbane
 D. A. Randall, B.Agr.Sc., *Agricultural Economist*, Toowoomba
 Q. R. Tomes, B.Econ., *Agricultural Economist*, Brisbane
 M. K. Wegener, B.Agr.Sc., *Agricultural Economist*, Brisbane

(c) MARKETING BRANCH

- D. R. J. Densley, B.Agr.Sc., *Marketing Officer*, Brisbane
 K. C. Guyatt, B.Com., A.A.U.Q., A.A.S.A., A.C.I.S., *Marketing Officer*,
 Brisbane
 N. H. Hall, B.Com., A.A.U.Q., *Marketing Officer*, Brisbane
 H. J. Holt, B.Econ., *Marketing Officer*, Brisbane
 S. W. Ivers, B.Com., Dip.Public Admin., A.A.S.A., *Marketing Officer*, Brisbane
 W. Kidston, B.Com., A.A.S.A., *Marketing Officer*, Brisbane
 D. R. Lewis, B.Sc.Econ., *Senior Marketing Officer*, Brisbane
 I. M. Roberts, B.Econ., *Marketing Officer*, Brisbane
 C. H. Wheatley, B.Econ., F.R.Met.S., *Marketing Officer*, Brisbane

(d) STANDARDS BRANCH

- A. C. Peel, Dip.Ind.Chem., A.R.A.C.I., *Standards Officer*, Brisbane
 R. L. Harty, B.Sc., *Assistant Standards Officer*, Brisbane
 E. T. Prodonoff, *Seed Analyst*, Brisbane

5. Division of Plant Industry

(a) DIVISIONAL HEADQUARTERS

William Street, Brisbane. Tel.: 33 9011

- L. G. Miles, B.Agr.Sc., Ph.D. (Corn.), *Director, Division of Plant Industry*
 A. W. S. May, M.Agr.Sc., Ph.D., *Assistant to Director*

(b) AGRICULTURAL CHEMICAL LABORATORY BRANCH

William Street, Brisbane. Tel.: 33 9011

- W. J. Cartmill, B.Sc., F.R.A.C.I., *Director, Agricultural Chemical Laboratory Branch*
 W. R. Winks, B.Sc., A.R.A.C.I., *Assistant Director, Agricultural Chemical Laboratory Branch*

Plant Nutrition Section

- F. Chippendale, M.Agr.Sc., *Officer-in-Charge, Plant Nutrition Section: soil-plant relations*
 N. G. Cassidy, M.Sc., F.R.A.C.I., *Senior Chemist: pasture soils*
 K. J. Coughlan, B.Agr.Sc., *Soil Physicist: microstructure of soil*
 E. T. Craswell, B.Agr.Sc., *Soils Technologist: soil microbiology*
 B. Entsch, B.Sc., *Chemist: biochemistry of disease resistance*
 H. Hassler, B.Sc., *Senior Soils Technologist: soil survey and land use*

COMMONWEALTH OF AUSTRALIA

C. E. Rose, Dip.Ind.Chem.Eng., A.R.A.C.I., *Chemist*: nutritional disorders
A. A. W. Webb, B.Agr.Sc., *Soils Technologist*: soil survey and land use

General Analytical Section

W. T. Kelso, B.Sc., A.R.A.C.I., *Chief Chemist*: chemistry of plants
T. J. Beckmann, M.Sc., A.R.A.C.I., F.C.S., *Senior Chemist*: herbicides; pesticides and their residues
D. J. Hamilton, B.Sc., A.R.A.C.I., F.C.S., *Chemist*: herbicides; pesticides and their residues
M. J. Price, D.I.C., A.R.A.C.I., *Chemist*: oil seeds; sulphur nutrition
A. R. Robinson, A.R.A.C.I., *Research Chemist*: herbicides; pesticides and their residues
R. L. Roofayel, B.Sc., A.R.A.C.I., *Chemist*: starch and tannin in grain

Atherton

C. L. van Wijk, M.Agr.Sc., *Soil Survey Officer*: soil survey and land use

Emerald

R. C. McDonald, B.Agr.Sc., *Soil Survey Officer*: soil survey and land use

Mareeba

L. D. J. Thomson, B.Sc., *Chemist*: chemical constituents of tobacco leaf
L. A. Warrell, B.Sc., *Soils Technologist*: soil fertility—maize, peanuts and tobacco

Millaroo

P. M. Cornish, B.Sc., *Chemist*: chemical changes in ameliorated soils
G. D. Smith, B.Agr.Sc., *Soil Physicist*: amelioration of heavy clays

Northgate

H. T. Green, D.I.C., B.Sc., A.R.A.C.I., *Chemist*: tobacco research (plant and soil)

South Johnstone

R. C. Bruce, B.Sc., *Chemist*: nutrition of pasture plants

Toowoomba, Queensland Wheat Research Institute, Holberton Street

D. P. Law, B.Sc., *Chemist*: wheat and barley quality
T. S. Rasmussen, B.Sc., *Chemist*: nitrogen uptake by wheat
M. J. Whitehouse, B.Sc., *Chemist*: nutritional requirements of wheat

(c) AGRICULTURE BRANCH

William Street, Brisbane. Tel.: 33 9001

S. Marriott, B.Agr.Sc., *Director of Agriculture*
L. R. Humphreys, M.Sc.Agr., *Assistant Director of Agriculture*
G. J. Cassidy, Q.D.A., B.Agr.Sc., *Research Agrostologist*: dairy pasture improvement
Miss D. E. Davidson, M.Sc., *Agrostologist*: plant introduction
J. P. Ebersohn, M.Sc., Ph.D., *Senior Agrostologist*: arid zone pasture ecology
A. S. Greasley, B.Sc., *Special Agronomist*: irrigation of crops and pastures
J. Harbison, B.Sc., *Agronomist*: general agronomy
W. H. Hazard, B.Agr.Sc., *Agronomist*: weed control
C. H. Middleton, Q.D.A., B.Agr.Sc., *Agrostologist*: dairy pasture improvement
H. Ostrowski, Dipl.Landw., *Agrostologist*: dairy pasture improvement
V. J. Wagner, B.Agr.Sc., *Chief Agronomist*: general agronomy, weed control, irrigation
A. Winterton, Q.D.A., B.Sc., *Senior Agronomist*: tobacco

Atherton

J. A. Gartner, B.Agr.Sc., *Agrostologist*: dairy pastures on basaltic tablelands

Blackall

G. R. Lee, B.Sc.Agr., *Agrostologist*: grassland ecology

Biloela, Research Station

D. G. Cameron, B.Sc.Agr., *Research Agrostologist*: pasture species evaluation

P. J. Goyne, B.Agr.Sc., *Agronomist*: cotton

R. G. Henzell, B.Agr.Sc., *Plant Breeder*: grain sorghum and forage sorghum improvement

V. E. Mungomery, B.Agr.Sc., *Plant Breeder*: cotton improvement

Bundaberg

W. J. Bissett, Q.D.A., B.Agr.Sc., *Research Agrostologist*: beef cattle pastures

J. C. Dean, Q.D.A., B.Agr.Sc., *Agronomist*: tobacco

Charleville

I. F. Beale, B.Agr.Sc., *Agrostologist*: ecology of native species

W. H. Burrows, B.Agr.Sc., *Agrostologist*: plant introduction, weed control

T. E. Telford, B.Agr.Sc., *Agronomist*: forage crops, water relations

Charters Towers

D. A. Carrigan, B.Agr.Sc., *Agrostologist*: ecology, plant introduction

Cloncurry

H. G. Bishop, B.Agr.Sc., *Agrostologist*: semi-arid tropical pastures

Cooroy

P. E. Luck, B.Agr.Sc., *Agrostologist*: dairy pastures

Emerald

A. J. Wetherell, B.Agr.Sc., *Agronomist*: land use, water relations

Gatton, Research Station

T. Dickson, B.Sc., *Agronomist*: irrigated lucerne, maize

Gayndah, "Brian Pastures", Pasture Research Station

K. B. Addison, B.Sc., *Research Agrostologist*: pasture and forage utilization

R. E. Hendricksen, B.Agr.Sc., *Agrostologist*: forage crops

W. J. Scateni, B.Agr.Sc., *Agrostologist*: pasture utilization

P. Stonard, B.Sc., *Agrostologist*: plant introduction and establishment

Gympie

G. W. Kyneur, B.Sc.Agr., *Research Agronomist*: dairy pasture nutrition

Hermitage, Research Station

R. P. Johnston, B.Agr.Sc., *Plant Breeder*: oil crop improvement

R. F. Moore, B.Agr.Sc., *Research Plant Breeder*: hybrid sorghum

J. L. Rose, B.Agr.Sc., *Plant Breeder*: oats, barley breeding

D. Rosser, B.Agr.Sc., *Senior Plant Breeder*: winter cereals

Kairi, Research Station

S. J. Barker, B.Agr.Sc., *Agronomist*: maize, land utilization

I. F. Martin, B.Sc., *Plant Breeder*: maize breeding in wet tropics

P. G. Tow, B.Sc., *Agronomist*: legume nutrition, plant competition

Kingaroy

J. E. Rawson, B.Sc., *Special Agronomist*: weed control

J. H. Saint-Smith, Q.D.A., Q.D.H., B.Sc.Agr., *Agronomist*: peanuts, general crop agronomy

Mackay

E. R. Anderson, B.Agr.Sc., *Agrostologist*: beef cattle brigalow pastures

D. I. Sillar, B.Sc.Agr., *Agrostologist*: wet tropical pastures

COMMONWEALTH OF AUSTRALIA

Mareeba

- J. S. R. Airy, B.Agr.Sc., *Agrostologist*: ecology, plant introduction
J. F. Archibald, M.Sc.Agr., *Research Agronomist*: crop nutrition
I. L. Gordon, B.Agr.Sc., *Agronomist*: tobacco varietal improvement
J. L. Groom, B.Agr.Sc., *Director of Tropical Agriculture*
G. D. Keefer, B.Sc., *Agronomist*: irrigation
C. A. Muir, B.Agr.Sc., *Agronomist*: soil fertility, general agronomy

Millaroo, Regional Experiment Station

- F. C. Lamberth, B.Agr.Sc., *Agrostologist*: beef cattle pastures

Northgate

- G. Gibson, B.Agr.Sc., *Agronomist*: tobacco

Parada, Research Station

- J. E. Ferguson, B.Agr.Sc., *Plant Breeder*: pasture legumes
P. McNee, B.Agr.Sc., *Agronomist*: tobacco
I. B. Staples, B.Agr.Sc., *Plant Breeder*: pasture legumes
D. K. Ward, B.Agr.Sc., *Agronomist*: tobacco

Richmond

- E. J. Weston, B.Agr.Sc., *Agrostologist*: semi-arid pasture ecology and forage cropping

Rockhampton

- T. G. Graham, Q.D.A., *Special Agrostologist*: beef cattle pastures

Roma

- C. J. Paull, B.Agr.Sc., *Agrostologist*: plant introduction and establishment

Theodore

- R. D. Cameron, B.Agr.Sc., *Agronomist*: irrigated crops

Toowoomba

- I. W. D. Barlow, B.Agr.Sc., *Agronomist*: irrigated crops
R. B. Brinsmead, B.Agr.Sc., *Agronomist*: irrigated crops
K. G. Trudgian, B.Agr.Sc., *Research Agronomist*: cotton
F. B. Watkins, B.Agr.Sc., *Agronomist*: weed control
N. D. Young, B.Agr.Sc., *Research Agrostologist*: plant introduction and establishment

Toowoomba, Queensland Wheat Research Institute, Holberton Street

- O. W. Duncan, B.Agr.Sc., *Agronomist*: winter cereal nitrogen nutrition
J. K. Leslie, B.Agr.Sc., *Research Agrostologist*: plant nutrition and establishment
D. L. Lloyd, B.Agr.Sc., *Agrostologist*: ley pasture evaluation
B. A. O'Shea, B.Agr.Sc., *Plant Physiologist*: plant nutrition

Walkamin, Research Station

- C. P. Miller, B.Agr.Sc., *Agrostologist*: irrigated pastures, plant introduction

South Johnstone, Tropical Agriculture Research Station

- D. R. Bailey, B.Agr.Sc., *Agronomist*: weed control
B. Grof, D.Agr., *Research Agrostologist*: tropical pasture introduction and nutrition
G. I. Jamieson, B.Agr.Sc., *Agrostologist*: plant nutrition
J. K. Teitzel, B.Agr.Sc., *Agrostologist*: plant nutrition and utilization

Warwick

- J. W. Littler, B.Agr.Sc., *Research Agronomist*: grain crops, wheat quality
J. M. T. Marley, B.Agr.Sc., *Agronomist*: weed control

(d) FOOD PRESERVATION RESEARCH BRANCH

Harbour Road, Hamilton, Brisbane. Tel.: 68 2421

- S. A. Trout, M.Sc., Ph.D., F.R.A.C.I., *Director and Biochemist*
J. R. Blake, B.Sc., *Physiologist*: storage and transport of bananas

- R. P. Bowden, B.Sc., A.R.A.C.I., *Chemist*: processing of citrus and pineapples
 B. F. Bradley, D.I.C., A.R.A.C.I., *Food Technologist*: processing of fruits
 B. I. Brown, B.Sc., A.R.A.C.I., *Chemist*: processing of apples and ginger
 E. T. Carroll, B.Agr.Sc., *Physiologist*: cool storage of apples
 D. W. Connell, M.Sc., A.R.A.C.I., *Chemist*: fruit flavours
 I. C. Hartland, B.Sc., A.R.A.C.I., *Chemist*: chemistry of banana maturation
 T. Hope, B.Sc., *Chemist*: fruit quality
 R. E. Leverington, D.I.C., F.R.A.C.I., *Special Food Technologist*: processing of fruit juices
 M. D. Littmann, B.Sc., *Physiologist*: cool storage of pineapples and vegetables
 B. C. Peacock, B.Sc., *Chemist*: storage and transport of bananas
 K. C. Richardson, B.Sc., *Bacteriologist*: bacterial wastage in stored foods
 C. D. Stevenson, D.I.C., F.R.A.C.I., *Special Physiologist*: physiological disorders of apples
 J. B. Watkins, B.Sc., *Physiologist*: storage and ripening of pears, stone fruit, papaws and tomatoes
 D. Winterton, D.I.C., A.R.A.C.I., *Food Technologist*: processing of vegetables

(e) HORTICULTURE BRANCH

William Street, Brisbane. Tel.: 33 9011

- J. H. Smith, M.Sc., N.D.A., *Director of Horticulture*
 R. C. Cannon, B.Agr.Sc., *Assistant Director of Horticulture*
 H. M. Groszmann, B.Agr.Sc., *Chief Plant Breeder*

Applethorpe, Granite Belt Horticultural Research Station

- R. H. Adams, B.Sc., *Plant Physiologist*: deciduous fruits (nutrition)
 K. R. Chapman, B.Agr.Sc., *Plant Physiologist*: deciduous fruits (water relations)
 B. C. Dodd, B.Agr.Sc., *Horticulturist*: vegetables (nutrition)
 L. A. Thomas, M.Sc., *Chief Horticulturist (Deciduous Fruits)*: rootstocks
 C. W. Winks, B.Sc., *Plant Breeder*: deciduous fruits

Bowen

- A. R. Mitchell, B.Agr.Sc., *Horticulturist*: tomatoes, beans

Cairns

- S. E. Stephens, *Horticulturist*: tropical fruits

Maryborough

- W. V. Mungomery, B.Agr.Sc., *Research Horticulturist*: sub-tropical tree fruits
 K. R. Jorgensen, B.Agr.Sc., *Horticulturist*: sub-tropical tree fruits

Nambour

- F. W. Berrill, B.Sc., *Senior Horticulturist (Plantation Crops)*: pineapples, bananas (crop management)
 R. F. Black, B.Sc., Ph.D., *Chief Plant Physiologist*: pineapples (nutrition)
 N. A. Cornwall, B.Agr.Sc., *Plant Physiologist*: pineapples (water relations)
 N. J. Grundon, B.Agr.Sc., *Horticulturist*: ginger (crop management)
 W. B. Hogarth, B.Sc., *Horticulturist*: pineapples (nutrition)
 M. E. Nicholson, B.Agr.Sc., *Horticulturist*: pineapples, bananas (crop management)
 P. E. Page, B.Sc., *Plant Physiologist*: pineapples (nutrition)

Ormiston, Redlands Horticultural Research Station

- R. E. Barke, B.Sc., *Plant Physiologist*: vegetables (nutrition)
 P. R. Beal, B.Agr.Sc., *Plant Breeder*: beans, passion fruit
 I. A. Bonner, B.Agr.Sc., *Plant Breeder*: tomatoes, strawberries
 B. W. Cull, Q.D.A., B.Agr.Sc., *Horticulturist*: vegetables (herbicides)
 N. S. Kruger, B.Sc., *Plant Physiologist*: vegetables (crop management)

COMMONWEALTH OF AUSTRALIA

- R. C. Menary, B.Sc., M.S. (Calif.), *Research Plant Physiologist*: vegetables (nutrition)
D. Schoorl, B.Sc.Agr., *Horticulturist*: container design and transport
K. M. Ward, M.Agr.Sc., *Chief Horticulturist (Vegetable Crops)*: crop management

(f) SCIENCE BRANCHES

(i) BOTANY

Botanic Museum and Herbarium, Botanic Gardens, Brisbane. Tel.: 33 9011, 2 8243

S. L. Everist, B.Sc., *Government Botanist*: economic botany; inland pastures; poisonous plants; weed control

S. T. Blake, D.Sc., *Research Botanist*: systematics of grasses, sedged, eucalypts, *Melaleuca*

R. J. F. Henderson, B.Sc., *Botanist*: systematic botany

H. E. Kleinschmidt, B.Sc., *Botanist*: systematic botany, weed control

Mrs. B. Lebler, B.Sc., *Botanist*: systematic botany

T. J. McDonald, B.Sc., *Botanist*: systematic botany, weed control

L. Pedley, B.Sc., *Botanist*: systematic botany, *Acacia*

L. S. Smith, B.Sc., *Research Botanist*: taxonomy and ecology of rain forest trees, Lantana

Theodore, Brigalow Research Station

R. W. Johnson, M.Sc., *Research Botanist*: ecology of brigalow country

(ii) ENTOMOLOGY

William Street, Brisbane. Tel.: 33 9011

W. A. McDougall, D.Sc., *Government Entomologist*

A. R. Brimblecombe, M.Sc., Ph.D., *Deputy Government Entomologist*

Miss K. J. Barnard, B.Sc., *Entomologist*: taxonomy and general entomology

J. H. Barrett, B.Agr.Sc., Q.D.A., *Entomologist*: pests of vegetables, sub-tropical fruits, ecology and general entomology

W. A. Smith, M.Sc., *Senior Entomologist*: Thysanoptera and general entomology

W. H. Yarrow, B.Sc., *Entomologist*: general entomology

Applethorpe

M. Bengston, M.Sc., *Research Entomologist*: Acarina; pests of deciduous fruits

R. A. McLachlan, B.Agr.Sc., Q.D.A., *Entomologist*: pests of deciduous fruits

Atherton

R. J. Elder, B.Agr.Sc., Q.D.A., *Entomologist*; pests of pastures and tropical fruits

G. W. Saunders, B.Agr.Sc., *Research Entomologist*: pests of pastures, tobacco, tropical fruits, ecology and general entomology

Indooroopilly

B. R. Champ, B.Agr.Sc., Ph.D., D.I.C., *Research Entomologist*: insecticides, storage pests

R. C. Colbran, M.Agr.Sc., Ph.D., *Research Entomologist*: nematology

J. H. D. Martin, B.Sc., *Entomologist*: diseases of insects

Mareeba

I. C. Cunningham, B.Agr.Sc., Q.D.A., *Entomologist*: pests of tobacco

Nambour

J. J. Davis, B.Sc., *Research Entomologist*: Acarina; pests of citrus, banana and vegetables

Rockhampton

B. N. E. Sabine, B.Sc., *Entomologist*: pests of cotton and grain crops

Toowoomba

T. Passlow, M.Sc.Agr., *Senior Entomologist*: Aphididae; pests of cotton, grain crops, pastures and general entomology

G. D. Shaw, B.Agr.Sc., *Entomologist*: pests of cotton and other field crops

J. W. Turner, B.Agr.Sc., *Entomologist*: pests of cotton and other field crops

Townsville

H. J. Lavery, M.Sc., *Research Entomologist*: fauna conservation and animal pests

Warwick

T. H. Kirkpatrick, M.Sc., *Research Entomologist*: fauna conservation and animal pests

J. McEvoy, B.Sc., *Entomologist*: fauna conservation and animal pests

(iii) PLANT PATHOLOGY

William Street, Brisbane. Tel.: 33 9011

B. L. Oxenham, B.Agr.Sc., *Government Plant Pathologist*: root diseases of fruit crops

J. L. Alcorn, B.Sc., *Plant Pathologist*: diseases of vegetables; powdery mildews

O. J. Burden, B.Sc. (Lond.), *Plant Pathologist*: mushroom culture; post-harvest diseases

A. Diatloff, B.Sc., *Plant Pathologist*: legume bacteriology

J. C. Johnson, M.Sc., *Research Pathologist*: diseases of vegetables

Miss M. L. Moffett, B.Sc., *Plant Disease Officer*: bacterial plant diseases; diseases of ornamentals

J. H. Simmonds, M.B.E., M.Sc., *Research Pathologist*: diseases of tropical fruits

Miss Y. N. Williams, B.Sc., *Plant Pathologist*: soil-borne diseases

Applethorpe

R. M. Lisle, B.Sc., *Plant Pathologist*: diseases of pome and stone fruits and grape vines

Cairns

W. Pont, B.Sc., *Senior Pathologist*: diseases of bananas, maize and tobacco

Indooroopilly

G. M. Behnken, B.Agr.Sc., *Plant Pathologist*: virus diseases of potatoes and pastures

R. S. Greber, B.Sc., *Plant Pathologist*: virus diseases of fruit crops and vegetables

D. S. Teakle, M.Agr.Sc., Ph.D., *Research Pathologist*: virus diseases of field crops, citrus and vegetables

Kingaroy

G. J. P. McCarthy, B.Agr.Sc., *Plant Pathologist*: diseases of peanuts, maize and lucerne

Mareeba

R. G. O'Brien, B.Agr.Sc., *Plant Pathologist*: diseases of tobacco and maize

Nambour

K. G. Pegg, B.Sc., *Plant Pathologist*: diseases of citrus, pineapples and beans

Toowoomba

I. K. Hughes, B.Sc., *Research Pathologist*: diseases of onions, potatoes and tobacco

G. B. Wildermuth, B.Sc., *Plant Pathologist*: diseases of field crops

Toowoomba, Queensland Wheat Research Institute, Holberton St.

T. McKnight, M.Sc., Ph.D., *Chief Pathologist*: diseases of cereals

G. S. Purss, M.Sc.Agr., *Senior Pathologist*: diseases of cereals and cowpeas

J. P. Thompson, B.Agr.Sc., *Plant Pathologist*: soil microbiology

COMMONWEALTH OF AUSTRALIA

6. Clerical and General Division

INFORMATION BRANCH

C. W. Winders, B.Sc.Agr., *Officer-in-Charge, Information Services*

P. B. Allan, B.Agr.Sc., *Extension Training and Research Officer: extension methods research*

D. DEPARTMENT OF PUBLIC INSTRUCTION

Queensland Agricultural College

Lawes, Queensland. Tel.: Gatton 1

1. ANIMAL INDUSTRY

Animal Nutrition

N. W. Briton, B.V.Sc., *Principal*

Animal Breeding

H. G. Sundstrom, B.V.Sc., *Senior Lecturer in Animal Husbandry*

L. G. Andrews, B.V.Sc., Q.D.A.H., *Lecturer in Animal Husbandry*

A. A. Baker, B.V.Sc., Q.D.A.H., *Lecturer in Animal Husbandry*

F. R. Staunton, B.V.Sc., *Lecturer in Animal Husbandry*

2. PLANT INDUSTRY

Plant Breeding

P. W. Grogan, B.Sc.Agr., *Senior Lecturer in Plant Industry*

Agronomy

J. C. Galletly, B.Agr.Sc., Q.D.A., *Lecturer in Agronomy*

R. J. McNamara, B.Sc.Agr., *Agronomist*

Agrostology

F. H. Kleinschmidt, M.Agr.Sc., Q.D.A., *Lecturer in Agrostology*

Agricultural Chemistry

R. J. Talbot, B.Agr.Sc., Q.D.H., *Lecturer in Agricultural Chemistry*

3. AGRICULTURAL ENGINEERING

A. B. Forbes, B.E., A.M.I.E. (Aust.), *Lecturer in Agricultural Engineering*

4. HORTICULTURE

L. M. Rule, B.Agr.Sc., Q.D.H., *Lecturer in Horticulture*

5. DAIRY SCIENCE

C. Churchill, B.Sc., *Assistant Lecturer in Dairy Science*

E. BUREAU OF SUGAR EXPERIMENT STATIONS

Head Office: 99 Gregory Terrace, Brisbane. B.19. Tel.: 2-2031 Cables:
Sugarbureau, Brisbane

1. Administration

N. J. King, *Director*

R. W. Mungomery, *Assistant Director*

2. Division of Cane Breeding

MERINGA, VIA GORDONVALE

J. H. Buzacott, M.Sc., *Senior Plant Breeder: cane-breeding, varietal selection*

J. C. Skinner, B.Sc.Agr., Ph.D., *Senior Geneticist: cane breeding, genetics*

J. E. Barnes, B.Agr.Sc., *Plant Breeder*

D. M. Hogarth, B.Agr.Sc., *Geneticist*

3. Division of Entomology

MERINGA, VIA GORDONVALE

- G. Wilson, B.Sc., *Senior Entomologist*: insect pests of sugar cane
 B. E. Hitchcock, B.Agr.Sc., *Entomologist*: insect pests of sugar cane
 J. A. Woods, B.Sc., *Entomologist*: cane-field rats

MACKAY

- I. M. Cook, B.Sc., *Biologist*: insects and diseases of cane in Central Queensland

4. Division of Pathology

BRISBANE

- C. G. Hughes, B.Sc.Agr., *Senior Pathologist*: diseases of sugar cane
 D. R. L. Steindl, B.Sc.Agr., *Senior Pathologist*: diseases of sugar cane

MACKAY

- I. M. Cook, B.Sc., *Biologist*: diseases and insects of cane in Central Queensland

MERINGA, VIA GORDONVALE

- B. T. Egan, B.Sc., *Research Pathologist*: *Leuconostoc* in cut cane, diseases of sugar cane

5. Division of Soils and Agronomy

BRISBANE

- H. E. Young, D.Agr.Sc., *Senior Physiologist*: nematodes, weeds, physiology of sugar cane
 K. C. Leverington, B.Sc., *Senior Chemist*: soil and plant growth, fertilizers

AYR

- K. S. Fischer, B.Agr.Sc., *Agronomist*: agronomy of sugar cane under irrigation

BUNDABERG

- R. B. Moller, B.Agr.Sc., *Special Agronomist*: agronomy of sugar cane

MACKAY

- L. S. Chapman, B.Agr.Sc., *Agronomist*: agronomy of sugar cane

MERINGA, VIA GORDONVALE

- R. Ferraris, B.Agr.Sc., *Agronomist*: agronomy of sugar cane in wet tropics

F. UNIVERSITY OF QUEENSLAND**1. Department of Agriculture**

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- E. J. Britten, M.Sc., Ph.D., F.A.A.A.S., *Professor of Agriculture, Head of Department*: cytogenetics and plant breeding
 R. J. McIlroy, M.Sc., Ph.D., *Professor of Agriculture*: biochemistry and animal nutrition
 W. E. Fox, B.Sc., Ph.D., *Senior Lecturer*: soil physics
 I. F. Horton, B.Sc., *Lecturer*: biometrics
 J. deR. Hughes, B.Sc., M.Agr.Sc., *Lecturer*: soil phosphate relations
 W. O. McCarthy, M.Agr.Sc., Ph.D., *Senior Lecturer*: agricultural economics
 P. J. Skerman, B.A., D.Agr.Sc., Q.D.D., M.B.E., *Reader*: agronomy, land utilization
 I. D. Smith, M.V.Sc., Ph.D., M.R.C.V.S., *Lecturer*: animal science and grazing, animal management
 Mrs. J. Tully, B.Sc.Hons., Ph.D., *Senior Lecturer*: agricultural extension

COMMONWEALTH OF AUSTRALIA

S. A. Waring, B.Sc.Agr., Ph.D., *Senior Lecturer*: soil fertility
H. L. Wood, M.Sc., Ph.D., F.R.A.C.I., *Senior Lecturer*: plant biochemistry

2. Department of Animal Husbandry

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A. W. Beattie, B.Sc.Agr., *Lecturer in Animal Husbandry*: biometrical genetics
E. A. Campbell, B.Sc. (Edin.), M.A., Ph.D., (Cantab.) F.R.C.V.S., *Reader in Animal Husbandry*: water metabolism; body composition
P. J. McCosker, M.A., Ph.D. (Cantab.), B.V.Sc., *Senior Lecturer in Animal Husbandry*: reproduction; yellow wood poisoning in sheep and cattle
W. J. Pryor, B.V.Sc. (Syd.), M.V.Sc. (Q'ld.), Ph.D. (Ore.), *Senior Lecturer in Animal Husbandry*: nutrition of cattle and sheep
J. A. Springhall, M.B.E., E.D., B.V.Sc. (Syd.), M.V.Sc., *Senior Lecturer in Animal Husbandry*: poultry nutrition

3. Department of Biochemistry

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H. J. G. Hines, B.Sc. (Lond.), *Professor*: physiological effects of unusual amino acids found in plants
R. L. Blakeley, B.S. (Calif.), Ph.D. (Harv.), *N.I.H. Fellow*: α -chymotrypsin
Miss M. D. Doherty, M.Sc. (Q'ld.), Ph.D. (ANU), *Lecturer*: creatine kinase
Mrs. M. Gilliland, M.Sc. (Q'ld.), *Lecturer*: streptomyces
D. Horgan, B.Sc.Hons. (Q'ld.), *N.H.M.R.C. Research Assistant*: pig liver carboxylesterase
Miss R. A. Leslie, B.D.Sc., B.Sc. (Q'ld.), *Lecturer*: messenger RNA
M. A. McDowall, M.Sc. (Otago), Ph.D. (Utah), *Lecturer*: protein structure
J. N. Mansbridge, B.A., Ph.D. (Cantab.), *Lecturer*: protein synthesis
C. J. Masters, M.Sc. (N.Z.), Ph.D. (Q'ld.), *Lecturer*: isoenzymes; control of protein synthesis
S. W. Perry, B.Sc. (Oxon.), *Laboratory Manager*: esterases in rat tissues
B. Zerner, M.Sc., Ph.D., Dip.Ed. (Q'ld.), *Reader*: mechanism of action of enzymes

4. Department of Botany

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R. L. Specht, M.Sc., Ph.D., *Professor of Botany*: ecology, productivity, conservation
J. E. C. Aberdeen, M.Agr.Sc., Ph.D., *Senior Lecturer*: plant pathology systematics of Agaricaceae
H. T. Clifford, M.Sc., Ph.D., *Senior Lecturer*: experimental taxonomy
D. J. Connor, M.Agr.Sc., Ph.D., *Lecturer*: ecology
A. B. Cribb, M.Sc., Ph.D., *Senior Lecturer*: forest botany, algology
R. F. N. Langdon, M.Agr.Sc., Ph.D., *Reader in Botany*: mycology (Ustilaginales, Claviceps)
D. Priest, M.Sc., Ph.D., *Lecturer*: Boletaceae
W. G. Slater, M.Sc., D.Phil., *Senior Lecturer*: physiology of drought and frost resistance
G. L. Wilson, B.Agr.Sc., D.Phil., *Senior Lecturer*: physiology of growth

5. Department of Entomology

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T. E. Woodward, M.Sc., Ph.D., D.I.C., *Senior Lecturer and Acting Head of Department*: systematics and ecology of Hemiptera

Miss E. M. Exley, M.Sc., D.I.C., *Lecturer*: biology and systematics of Apoidea and Formicidae

G. H. S. Hooper, M.Sc., Ph.D., *Lecturer*: resistance to insecticides

Miss E. N. Marks, M.Sc., Ph.D., *Senior Research Officer*: biology and systematics of Culicidae

Miss L. A. Powell, M.Sc., *Demonstrator*: systematics and biology of Lampyridae

E. J. Reye, M.B., B.S., *Research Officer*: biology, systematics and control of Ceratopogonidae

6. Department of Microbiology

Medical School, Herston N.9, Brisbane. Tel.: 5 4673

V. B. D. Skerman, D.Sc., B.Sc.Agr., Q.D.A., *Professor and Head of Department*: nitrogen transformation and microflora of soils

J. G. Atherton, Ph.D., *Reader*: studies on susceptibility of tissue cells to plant viruses

A. C. Hayward, Ph.D., *Lecturer*: ecology of *Pseudomonas solanacearum*

7. Department of Parasitology

Mill Road, St. Lucia, Brisbane. Tel.: 70 2021. Cables: Parasitology, University, Brisbane

J. F. A. Sprent, Ph.D., D.Sc., F.R.C.V.S., F.A.A., *Professor of Parasitology and Head of Department*: life history of the ascaridoid nematodes

C. Dobson, B.Sc., Ph.D., *Lecturer in Parasitology (Immunology)*: effects of hormonal balance on the worm populations of sheep

H. M. D. Hoyte, B.Sc., Ph.D., *Senior Lecturer in Parasitology*: fine structure and life cycles of blood protozoa

D. E. Moorhouse, M.A., D.Phil., *Lecturer in Parasitology (Entomology)*: arthropods as vectors of parasites and disease

J. C. Pearson, M.A., Ph.D., *Senior Lecturer in Helminthology*: digenetic trematodes of native animals

A. H. Waddell, B.V.Sc., *Lecturer in Veterinary Parasitology*: life histories and fine structure of nematodes parasitic in domestic animals

8. Department of Physiology

Mill Road, St. Lucia, Brisbane. Tel.: 71 1377

O. E. Budtz-Olsen, M.B., Ch.B., M.D. (Cape T.), *Professor of General Physiology*: water and salt metabolism, and reactions to environmental heat of domestic animals

A. W. Blackshaw, D.V.Sc. (Syd.), *Reader in Physiology*: reproductive physiology of the male animal

R. B. Cross, Ph.D. (Edin.), M.D. (Q'ld.), *Reader in Physiology*: renal functions of the sheep

9. Department of Psychology

Animal Behaviour Unit

G. McBride, M.Agr.Sc., Ph.D., *Senior Lecturer*

10. Veterinary School

Mill Road, St. Lucia, Brisbane. Tel.: 71 1377

(a) DEPARTMENT OF PREVENTIVE MEDICINE

J. Francis, D.Sc., F.R.C.V.S., *Professor of Preventive Medicine*: tuberculosis, meat hygiene and veterinary public health; adaption of British and Brahman cattle to tropical conditions

COMMONWEALTH OF AUSTRALIA

Miss L. Clark, B.V.Sc., *Diagnostic Pathologist*: pathology of neurotropic virus infections

A. J. Frost, D.V.Sc., Ph.D., *Lecturer in Bacteriology*: bovine mastitis and staphylococcal infections

A. A. Seawright, B.V.Sc., B.Sc., *Senior Lecturer in Pathology*: biochemical pathology and toxicology

H. Winter, D.V.M., *Senior Lecturer in Pathology*: anaemia and bone-marrow regeneration

(i) *Tropical Preventive Medicine Laboratory*

University Farm, Moggill, Brisbane. Tel.: 70 6261

T. K. Bell, B.V.Sc., Ph.D., *Senior Research Officer*: blood groupings and specific proteins of cattle

R. M. Inglis, B.V.Sc., *Research Officer*: cardiotoxicity and electrocardiography

C. J. Sanderson, B.V.Sc., *Research Officer*: arbovirus infections

P. B. Spradbrow, B.V.Sc., Ph.D., *Senior Research Officer*: veterinary virology

(ii) *Sub-Department of Anatomy*

N. D. S. May, M.Sc., Ph.D., Q.D.S., *Senior Lecturer and Head of Department*: ruminant anatomy

J. Grandage, B.V.M. (Lond.), *Lecturer in Anatomy and Embryology*: ruminant arthrology

P. M. McCarthy, B.V.Sc., *Lecturer in Anatomy*: surface anatomy

R. Tucker, D.V.M., B.V.Sc., *Lecturer in Histology and Embryology*: comparative histology and biomechanics

(iii) *Applied Anatomy Laboratory*

University Farm, Moggill, Brisbane. Tel.: 70 6261

R. M. Butterfield, M.V.Sc., Ph.D., R.D.A., *Senior Research Officer*: comparative anatomy of British and Brahman cattle

E. R. Johnson, B.V.Sc., *Research Officer*: comparative anatomy of British and Brahman cattle

(b) DEPARTMENT OF VETERINARY CLINICAL STUDIES

Mill Road, St. Lucia, Brisbane. Tel.: 70 2021

P. B. English, M.V.Sc., Ph.D., M.R.C.V.S., *Professor of Veterinary Clinical Studies*: general veterinary medicine; antibiotic therapy in domestic animals; water and electrolyte metabolism

R. H. G. Burns, B.V.Sc., *Reader in Veterinary Surgery*: treatment of fractures; anaesthesia

J. A. Berriman, B.V.Sc., *Senior Lecturer in Veterinary Medicine*: diseases of the horse

L. R. Grono, B.V.Sc., *Senior Lecturer in Surgery*: *Otitis externa* in the dog; large animal anaesthesia

H. G. Osborne, B.V.Sc., M.R.C.V.S., *Reader in Veterinary Medicine*: diseases of sheep and beef cattle; infertility

Pastoral Veterinary Centre, Goondiwindi

R. A. Swan, B.V.Sc., *Lecturer in Veterinary Medicine, and Officer-in-Charge*: diseases of sheep; grazing behaviour; infertility

G. QUEENSLAND MUSEUM

Gregory Terrace, Brisbane. Tel.: 5 2716

J. T. Woods, M.Sc., *Director*

E. C. Dahms, B.Sc.Agr., *Curator of Entomology*: general determinations; research in Multillidae

SOUTH AUSTRALIA

A. DEPARTMENT OF AGRICULTURE

Agriculture Building, 133-137 Gawler Place, Adelaide. Tel: 28-4811

Research Laboratories, Northfield. Tel.: 61-3865, 61-3656, 61-3288

A. G. Strickland, C.B.E., M.Agr.Sc., F.A.I.A.S., *Director of Agriculture*

1. **Agricultural Economics**

C. C. Catt, B.Agr.Ec.Hons., *Agricultural Economist: farm management*

2. **Animal Industry Division**

M. R. Irving, B.V.Sc., H.D.A., *Deputy Director of Agriculture and Chief of Division*

(a) **ANIMAL HEALTH BRANCH**

W. S. Smith, B.V.Sc., *Chief Inspector of Stock*

J. T. Fearn, B.V.Sc., *Principal Veterinary Officer*

J. H. Bray, B.V.Sc., R.D.A., *Senior Veterinary Research Officer (Poultry Diseases)*

K. J. Dobson, B.V.Sc., *Senior Veterinary Research Officer (Pigs)*

M. E. Dodson, B.V.Sc., *Senior Veterinary Research Officer (Cattle Diseases)*

R. G. Gabb, B.V.Sc., *Veterinary Officer: cattle infertility*

G. H. McIntosh, B.V.Sc., *Veterinary Officer: sheep*

M. F. Pulsford, B.V.Sc., H.D.A., *Senior Veterinary Research Officer (Sheep Diseases)*

M. H. Richards, R.D.A., *Field Investigation Officer: sheep diseases*

K. W. Sinclair, R.D.A., *Livestock Officer: sheep diseases*

(b) **ANIMAL HUSBANDRY BRANCH**

H. V. Chamberlain, B.V.Sc., R.D.A., *Chief Livestock Officer*

E. A. Dunstan, B.Agr.Sc., *Livestock Officer: poultry husbandry*

P. E. Geytenbeek, B.Agr.Sc., *Senior Livestock Officer, Meat: lamb, beef and pig husbandry*

F. A. Kuneman, B.Agr.Sc., *Livestock Research Officer (Beef): beef husbandry*

J. M. Lobban, B.Sc. (Rand), *Senior Livestock Research Officer: pasture utilization*

D. W. Maddern, B.Ru.Sc., *Livestock Research Officer (Meat): beef husbandry*

C. J. Mulhearn, B.V.Sc., *Principal Livestock Officer: nutrition of sheep*

J. M. Obst, B.Ru.Sc., *Livestock Research Officer: lamb mortality, climate physiology*

J. C. Potter, B.Agr.Sc., *Senior Research Officer, Wool: wool production*

(c) **DAIRY BRANCH**

A. G. Itzerott, M.Agr.Sc., *Chief Dairy Officer*

J. T. Feagen, M.Agr.Sc., *Principal Dairy Research Officer*

L. F. Bailey, B.Agr.Sc., *Livestock Officer: genetics of blood groups in relation to dairy production*

G. E. Durney, M.A. (N.Z.), *Research Officer: production recording*

A. F. Hehir, B.Sc.Agr., *Dairy Research Officer: dairy product investigations*

J. C. Radcliffe, Ph.D., B.Agr.Sc., *Dairy Husbandry Officer: fodder crop utilization*

B. R. White, B.Sc., *Dairy Research Officer: farm management*

3. **Division of Plant Industry**

A. J. K. Walker, B.Agr.Sc., R.D.A., *Chief of Division*

(a) **AGRICULTURE BRANCH**

F. B. Pearson, R.D.A., *Chief Agronomist*

P. M. Barrow, B.Agr.Sc., *Principal Research Officer (Agronomy)*

COMMONWEALTH OF AUSTRALIA

- P. G. Allen, B.Agr.Sc., *Research Officer (Agronomy)*: insect pests of germinating cereals
R. J. Banyer, B.Sc., R.D.A., *Research Officer (Agronomy)*: diseases of crops and pastures
P. R. Birks, M.Agr.Sc., *Research Officer (Agronomy)*: insect pests of pastures, cereals and other field crops
K. G. Boyce, B.Agr.Sc., *Research Officer (Agronomy)*: irrigated field and seed crops
E. J. Crawford, R.D.A., *Plant Introduction Officer*: herbage plant introduction
J. B. Doolette, B.Agr.Sc., *Senior Research Officer (Cereals)*
J. V. Ellis, B.Agr.Sc., *Biometrician*: statistical design of field experiments
T. G. Heard, B.Agr.Sc., *Research Officer*: wheat agronomy
E. D. Higgs, B.Agr.Sc., *Senior Research Officer (Pastures)*: pasture seed production
P. Judd, B.Sc.Agr.Hons. (Lond.), *Senior Research Officer (Irrigation)*: pasture irrigation
M. J. Mathison, B.Agr.Sc., *Research Officer (Agronomy)*: plant breeding annual medics
C. L. Watson, B.Agr.Sc., *Research Officer (Agronomy)*: pasture irrigation and drainage

(b) HORTICULTURE BRANCH

- T. C. Miller, B.Sc.Agr., *Chief Horticulturist*
M. B. Spurling, M.Agr.Sc., *Principal Horticulturist*: fruit packaging
E. W. Boehm, B.Sc.Agr., *Senior Research Officer (Viticulture)*
J. R. Botham, B.Agr.Sc., H.D.A., *Senior Research Officer (Citrus)*
A. C. Chappell, B.Agr.Sc., *Research Officer*: irrigation and drainage
H. D. Feddersen, Dip.Agr. (Schlesweig), *Potato Adviser*: potato nutrition and disease control
F. J. Gathercole, B.Agr.Sc., *Research Officer*: stone fruits
W. B. Harris, B.Agr.Sc., *Senior Research Officer*: research stations
R. Howles, Ph.D. (Cantab.), B.A., *Horticultural Research Officer*: virology potatoes and citrus
W. J. Moller, M.Agr.Sc., *Research Officer*: plant pathology
J. W. Randles, B.Agr.Sc.Hons., *Research Officer*: virology vegetables and apples
N. L. Richardson, B.Agr.Sc., *Horticultural Research Officer*: horticultural entomology, citrus red scale
I. S. Rogers, B.Agr.Sc., *Research Officer*: vegetables
M. R. Till, B.Agr.Sc., *Senior Research Officer (Irrigation)*: irrigation of horticultural crops
B. L. Tugwell, B.Agr.Sc., *Research Officer*: fruit storage
H. W. Tulloch, R.D.A., R.D.Oen., B.S. (Calif.), *Research Officer*: viticulture—grape breeding
Miss M. R. Wauchope, B.Agr.Sc., *Research Officer*: plant pathology

(c) SOIL CONSERVATION BRANCH

- J. A. Beare, B.Agr.Sc., *Chief Soils Officer*
R. M. Baker, B.Agr.Sc., R.D.A., *Principal Soils Officer*: soil and land use survey
A. L. Clarke, M.Agr.Sc., *Senior Research Officer*: soil fertility
J. A. Edwards, B.Sc. (Lond.), *Senior Soils Officer*: water storage and run-off control
D. E. Elliott, B.Agr.Sc., *Soil Conservation Officer*: soil and land use survey
R. J. French, B.Agr.Sc., R.D.A., *Senior Research Officer*: soil fertility
K. Woodroffe, B.Agr.Sc., R.D.A., *Soil Conservation Officer*: soil and land use survey
W. E. Matheson, B.Agr.Sc., *Senior Soils Officer*: soil and land use survey
S. D. Moore, R.D.A., *Soil Conservation Adviser*: flood irrigation techniques

COMMONWEALTH OF AUSTRALIA

- J. S. Potter, B.Agr.Sc., *Soil Conservation Officer*: soil and land use survey
D. J. Reuter, B.Agr.Sc., *Soil Conservation Officer*: soil fertility
C. S. Robinson, B.Sc., *Ecologist*: dry land ecology
C. L. Rudd, B.Agr.Sc., *Soil Conservation Officer*: soil fertility
J. E. Schultz, B.Agr.Sc., *Soil Conservation Officer*: soil moisture
M. T. Seeliger, B.Agr.Sc., *Soil Conservation Officer*: soil and land use
G. N. Thomas, B.Agr.Sc., *Soil Conservation Officer*: soil and land use

4. Research Centres

- (a) BLACKWOOD EXPERIMENTAL ORCHARD, Blackwood Tel.: 78-1033
R. W. I. Cowley, R.D.A., *Manager*
- (b) KANGAROO ISLAND RESEARCH CENTRE, Parndana Tel.: Parndana East 234
H. R. Day, R.D.A., *Officer-in-Charge*
- (c) KYBYBOLITE RESEARCH CENTRE, Kybybolite Tel.: Kybybolite 2
B. A. Ninnies, R.D.A., *Acting Officer-in-Charge*
- (d) LOXTON RESEARCH CENTRE, Loxton Tel.: Loxton 7771
R. F. Hilder, Dip.Agr. (Wagga), *Acting Officer-in-Charge*
- (e) MINNIPA RESEARCH CENTRE, Minnipa Tel.: Minnipa 31
D. B. Winn, R.D.A., *Officer-in-Charge*
- (f) NORTHFIELD RESEARCH CENTRE, Northfield Tel.: 61-2427
B. W. Bussell, R.D.A., H.D.D., *Officer-in-Charge*
- (g) STRUAN RESEARCH CENTRE—BEEF CATTLE, Struan Tel.: Struan 4-7419
R. W. McNeil, *Manager*
- (h) TURRETFIELD RESEARCH CENTRE, Rosedale Tel.: Rosedale 7
H. C. Nourse, R.D.A., *Acting Officer-in-Charge*
- (i) VITICULTURAL STATION, Nuriootpa Tel.: Nuriootpa 83
M. A. Loder, Diplom.Landwirt (Stuttgart), *Acting Manager*
- (j) WANBI RESEARCH CENTRE, Wanbi Tel.: Wanbi 11
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B. WOODS AND FORESTS DEPARTMENT

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- B. H. Bednall, C.B.E., B.Sc., *Conservator of Forests, Head of Department*
J. Thomas, B.Sc., Dip.For., *Assistant Conservator of Forests*: silviculture, management
R. Boardman, M.Sc.: silviculture
C. D. Boomsma, M.Sc., Dip.For.: silviculture
R. S. Bungey, B.Sc., Dip.For.: forest entomology
D. R. Douglas, B.Sc., Dip.For.: fire protection
J. H. Harding, B.Sc., *Research Officer*: soils, tree nutrition, fertilizers, biometrics
V. M. Healy, B.Sc., Dip.For.: silviculture, management
A. Keeves, B.Sc., Dip.For. (Oxon.), Dip.For. (Canb.): management
J. W. Leech, B.Sc., Dip.For.: management
N. B. Lewis, B.Sc. Dip.For.: forest management

C. UNIVERSITY OF ADELAIDE

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COMMONWEALTH OF AUSTRALIA

(a) DEPARTMENT OF AGRICULTURAL BIOCHEMISTRY AND SOIL SCIENCE

- D. J. D. Nicholas, M.A., Ph.D., D.Sc., A.K.C., F.R.I.C., F.R.A.C.I., *Waite Professor of Agricultural Biochemistry and Soil Science*: metabolism of inorganic nitrogen in micro-organisms and plants
- R. J. Best, D.Sc.: plant viruses
- P. F. Brownell, B.Agr.Sc., Ph.D.: sodium in plant nutrition
- H. P. C. Gallus, M.Sc.: analytical biochemistry
- D. J. Greenland, M.A., B.Sc., Ph.D.: interactions of clays and organic compounds
- J. F. Jackson, B.Sc., Ph.D.: biochemistry of nucleotides
- A. C. Jennings, M.Sc.: proteins in the developing wheat grain
- J. W. Kijne, B.Sc., Ph.D.: soil physics
- D. G. Lewis, B.Sc., Ph.D.: potassium and phosphate in soils
- D. R. Liljegren, B.Sc., Ph.D.: alkaloid biosynthesis
- H. R. J. Lovelock: continuous cultures of bacteria
- Y. Nagai, B.Sc., Ph.D.: nitrogen fixation in free-living bacteria
- M. S. Naik, B.Sc., Ph.D.: nitrogen fixation and denitrification
- J. M. Oades, B.Sc., Ph.D.: iron oxides; soil organic matter
- P. E. Stanley, B.Sc., Ph.D.: nucleic acids in chemo autotrophic bacteria
- R. C. Stefanson, B.Sc., Ph.D.: turnover of nitrogenous compounds in soils
- M. E. Tate, M.Sc., Ph.D.: inositol phosphates
- W. Wallace, B.Sc., Ph.D.: nitrate reduction in green plants
- J. R. E. Wells, B.Sc., Ph.D.: plant proteases
- S. G. Williams, B.Sc., Ph.D.: energy supply in the developing wheat germ
- S. B. Wilson, B.Sc., Ph.D.: wheat proteins

(b) DEPARTMENT OF AGRONOMY

- C. M. Donald, D.Sc.Agr., F.A.I.A.S., *Waite Professor of Agriculture*: crop ecology; plant competition
- W. G. Allden, M.A., M.Agr.Sc.: nutrition of grazing sheep
- K. P. J. Barley, M.Agr.Sc.: soil strength and crop growth
- J. A. Carpenter, M.Sc.Agr., Ph.D.: seed ecology of subterranean clover; cocksfoot studies
- E. D. Carter, B.Agr.Sc.: pasture utilization
- A. R. Egan, B.Agr.Sc., Ph.D.: sheep nutrition
- K. W. Finlay, B.Agr.Sc., Ph.D.: adaptation studies on cereals
- A. K. Kaul, M.Agr.Sc., Ph.D.: wheat protein inheritance
- R. Knight, B.Sc., Dip.Trop.Agr., Ph.D.: Mediterranean and Northern European types of cocksfoot
- G. Leach, B.Sc., Ph.D.: lucerne studies
- R. J. Millington, M.Sc., Ph.D.: plant/soil relations
- J. K. Powrie, B.Agr.Sc., M.Sc.: phosphorus and sulphur in sandy soils
- D. W. Puckridge, M.Agr.Sc., Ph.D.: rates of photosynthesis in crop plants
- A. J. Rathjen, B.Agr.Sc., Ph.D.: wheat breeding
- K. W. Shepherd, B.Agr.Sc., Ph.D.: wheat protein inheritance
- J. H. Silsbury, M.Agr.Sc.: growth and morphogenesis of pasture grasses
- D. H. B. Sparrow, B.Sc.: genotypic differences in the malting quality of barley
- D. E. Symon, B.Agr.Sc.: taxonomic botanical service
- H. M. Taylor, B.Agr.Sc., Ph.D.: soil strength and crop growth

(c) DEPARTMENT OF ANIMAL PHYSIOLOGY

- W. V. Macfarlane, M.A., M.D., Ch.B., *Professor of Animal Physiology*: physiological ecology of mammals in hot arid regions
- Mrs. N. A. Brewer, Ph.D.: comparative cytology
- Miss B. Howard, B.Sc., Ph.D.: ruminant water metabolism
- R. F. Seamark, B.Agr.Sc., Ph.D.: biochemical inter-relations of mother and foetus

(d) BIOMETRY SECTION

G. N. Wilkinson, M.Sc., *Reader in Biometry* (seconded by C.S.I.R.O. Division of Mathematical Statistics): statistical design and analysis
Miss B. S. Niven, B.Sc., M.Sc.: stochastic population models

(e) DEPARTMENT OF ENTOMOLOGY

T. O. Browning, B.Sc., Ph.D., *Professor of Entomology*: ecology of the kangaroo tick; developmental physiology of cricket eggs
W. P. Rogers, M.Sc., Ph.D., D.Sc., F.A.A., *Professor of Parasitology*: physiology of parasites
R. H. Brewer, Ph.D.: parasites and predators of red scale
Miss H. M. Brookes: coccoidea
Mrs. M. Carver, B.Sc., Ph.D.: aphididae
K. M. Doull, M.Agr.Sc.: protein nutrition of honey bees
D. A. Maelzer, M.Sc., Ph.D.: measurement of regulation of populations
P. W. Miles, M.Sc., Ph.D.: formation and function of saliva in Hemiptera
F. D. Morgan, M.Sc., Ph.D.: forest insect pests in South Australia
R. Laughlin, B.A., M.A., Ph.D.: thrips

(f) DEPARTMENT OF PLANT PATHOLOGY

N. T. Flentje, M.Sc., Ph.D., *Professor of Plant Pathology*: genetics, physiology and ecology of pathogenic soil fungi
M. V. Carter, Ph.D.: epidemiology of air-borne fungi
B. G. Clare, M.Sc.: fungal proteins and fungal taxonomy
N. C. Crowley, B.Sc.Agr., Ph.D.: purification and properties of viruses
J. M. Fisher, B.Sc.Agr., Ph.D.: nematodes
R. I. B. Francki, Ph.D.: structure and multiplication of viruses
R. Hall, B.Agr.Sc., Ph.D.: fungal proteins and fungal taxonomy
A. Kerr, B.Sc., Ph.D.: physiology of infection
A. B. Lloyd, B.Sc., Ph.D.: destruction of fungal hyphae in soil
P. H. B. Talbot, M.Sc., Ph.D.: taxonomy of fungi
J. H. Warcup, M.Sc., Ph.D.: ecology of soil fungi

(g) DEPARTMENT OF PLANT PHYSIOLOGY

L. G. Paleg, B.A., M.Sc., Ph.D., *Reader in Plant Physiology*: action of plant hormones
D. Aspinall, B.Sc., Ph.D.: environmental control of plant growth and development
B. G. Coombe, M.Agr.Sc., Ph.D.: physiology of fruit set and growth
G. K. Douglas, B.Sc., Ph.D.: biosynthesis of oestrogen-like substances in clover
G. R. Edwards, B.Agr.Sc., M.Sc.: leaf growth in relation to flower initiation
C. F. Jenner, M.Sc., Ph.D.: nucleic acid metabolism and carbohydrate synthesis
N. G. Marinos, B.A., M.S., Ph.D.: electron microscopy of plant cells
Mrs. F. H. Randles, B.Sc.: differential effects of light on plant growth

(h) FARM DEPARTMENT

K. A. Pike, R.D.A., *Farm Manager*

2. Department of Botany

North Terrace, Adelaide. Tel.: 23 4333

R. N. Robertson, B.Sc., Ph.D., F.R.S., *Professor of Botany*: plant physiology
Miss C. M. Eardley, M.Sc., *Lecturer*: plant taxonomy
R. T. Lange, Ph.D., *Lecturer*: plant ecology; microbiology
P. G. Martin, Ph.D., *Senior Lecturer*: cell biology
M. G. Pitman, Ph.D., *Lecturer*: plant physiology
J. T. Wiskich, Ph.D., *Lecturer*: plant biochemistry
H. B. S. Womersley, Ph.D., D.Sc., *Reader*: marine algae

COMMONWEALTH OF AUSTRALIA

3. Department of Genetics

North Terrace, Adelaide. Tel.: 23 4333

J. H. Bennett, M.A., B.Sc. (Melb.), Ph.D. (Cantab.), *Head of Department*

G. R. Fraser, M.A., M.B., B.Ch. (Cantab.), Ph.D. (Lond.), *Reader*

D. L. Hayman, Ph.D. (Adel.), *Senior Lecturer*

Miss J. A. W. Levy, M.Sc. (Adel.), *Senior Demonstrator*

G. M. E. Mayo, Ph.D. (Adel.), *Senior Lecturer*

Mrs. M. J. Mayo, Ph.D. (Cantab.), M.Sc. (Melb.), *Senior Lecturer*

Miss C. R. Oertel, B.Sc. (Adel.), *Demonstrator*

4. Department of Zoology

North Terrace, Adelaide, S. Aust. Tel.: 23 4333

H. G. Andrewartha, D.Sc., *Professor and Head of Department*: ecology of insects

Miss Laura M. Angel, M.Sc., *Senior Demonstrator*: site-cycles of trematodes

S. Barker, Ph.D. (W. Aust.), *Lecturer*: ecology of vertebrates

S. J. Edmonds, B.A., Ph.D., *Senior Lecturer*: physiology of parasitic worms

M. Smyth, B.Sc.Hons. (Adel.), D.Phil. (Oxon.): ecology of vertebrates

R. I. Sommerville, M.Agr.Sc. (N.Z.), *Senior Lecturer*: physiology of parasitic worms

P. M. Thomas, M.Sc. (Wales), *Senior Lecturer*: taxonomy of trematodes

T. C. R. White, B.Sc. (N.Z.), B.Sc.For. (Edin.), Ph.D.: ecology of insects

D. INSTITUTE OF MEDICAL AND VETERINARY SCIENCE

Frome Road, Adelaide. Tel.: 23 0230. Cables: Medvet, Adelaide

J. A. Bonnin, M.D., B.S. (Adel.), M.C.P.A., M.R.A.C.P., *Director*

W. E. R. Hackett, M.A., M.D., B.Ch. (Dub.), M.C.P.A., *Deputy Director*

Veterinary Division

P. S. Watts, Ph.D. (Cantab.), B.Sc. (Lond.), Dip.Bact., F.R.C.V.S., *Senior Veterinary Pathologist, Head of Division*

(a) BACTERIOLOGY

K. H. Clapp, M.Sc., *Serologist*: complement fixation tests especially for ovine brucellosis and bartonellosis; serology of avian mycoplasma

Miss J. Symonds, B.Sc., *Graduate Assistant*: vibriosis

(b) BIOCHEMISTRY

Mrs. E. A. Irving, M.Sc., *Biochemist*: vitamins E and C metabolism and the relationship between vitamins and minerals in the diet of poultry

(c) DIAGNOSTIC SECTION

D. Sheriff, M.R.C.V.S., *Veterinary Pathologist*: Eperythrozoon as a cause of unthriftiness in sheep and bartonellae as a cause of disease in cattle

(d) HISTOPATHOLOGY

R. Rac, D.V.M. (Zagreb), *Veterinary Pathologist*: goitre in lambs with particular reference to heredity

(e) LABORATORY ANIMAL CENTRE

P. S. Watts, Ph.D. (Cantab.), B.Sc. (Lond.), Dip.Bact., M.R.C.V.S., *Senior Veterinary Pathologist*: nutrition and husbandry of laboratory and exotic animals; vitamin requirements of guinea-pigs and the design of accommodation for all types

(f) PARASITOLOGY

- J. A. W. Banks, M.Sc., B.V.Sc. (Syd.), *Veterinary Pathologist*: economics of nematode infestation of sheep and cattle and the effects of anthelmintics under natural conditions

E. ROSEWORTHY AGRICULTURAL COLLEGE

Roseworthy, South Australia. Tel.: Roseworthy 2 and 28

- R. I. Herriot, B.Agr.Sc., *Principal*
 M. R. Krause, B.Agr.Sc., R.D.A., *Vice-Principal*
 C. S. Bungey, B.Rur.Sc.: animal production
 M. V. Burton, M.Agr.Sc.: agronomy
 B. N. Gerrard, B.Sc. Hons.: biochemistry
 F. B. Hardy, M.R.C.V.S.: animal health
 G. J. Hollamby, B.Agr.Sc.: cereal breeding
 K. B. Leske, B.Agr.Sc.: rural economics
 D. J. Parry, B.Agr.Sc.: soil chemistry
 G. R. Quick, B.E., Dip.M.E.: agricultural engineering
 D. R. Woodruff, B.Sc.: plant ecology

TASMANIA

A. DEPARTMENT OF AGRICULTURE

Box 192B, G.P.O., Hobart. Tel.: Hobart 303011

- F. W. Hicks, I.S.O., H.D.A., *Director of Agriculture*: direction of departmental activities

1. Agronomy Division

- E. F. Fricke, M.Agr.Sc., Dip.Agr., *Chief Agronomist*
 B. J. Baldwin, B.Sc., *Agronomist*: weeds
 C. L. Banath, M.Sc.Agr., *Agronomist*: pasture plant nutrition
 G. B. Campbell, B.Agr.Sc., Dip.Agr., *Agronomist*: pasture species
 P. J. Fountain, B.Sc.Agr., *Senior Agronomist*: potato research
 B. Hyde-Wyatt, B.Sc., *Agronomist*: weeds
 J. P. Kennedy, B.A., Dip.Agr.Econ., *Senior Agronomist*: weeds
 G. J. Martin, B.Agr.Sc., *Agronomist*: pasture species
 D. F. Paton, B.Agr.Sc., *Senior Agronomist*: pasture problems and soil deficiencies
 J. Russell, B.Sc., *Agronomist*: cereal and pulse crops
 K. M. Stackhouse, B.Sc., R.A.C.I., *Agronomist*: soil and plant chemistry
 J. G. Stephens, B.Sc., *Agronomist*: potato breeding
 J. C. Tilt, *Senior Agronomist*: cereal and pulse crops
 W. A. Vertigan, B.Sc., *Agronomist*: cereal and pulse crops

2. Animal Health Service

- G. K. Meldrum, B.V.Sc., *Chief Veterinary Officer*: administration of service
 R. J. Green, B.V.Sc., *Deputy Chief Veterinary Officer*: assists in administration of service; epidemiology; exotic disease quarantine
 T. M. Alexander, M.R.C.V.S., *Chief Veterinary Pathologist*: direction of veterinary laboratory; diseases of feet of sheep
 A. Corbould, B.Sc.Agr., *Bacteriologist*: veterinary bacteriology
 G. C. Johnston, B.Sc., *Vermin Research Officer*: vermin control
 J. D. McConnell, B.V.Sc., *Veterinary Specialist Officer*: epidemiology of brucellosis, ovine footrot, hydatidosis
 B. L. Munday, B.V.Sc., *Veterinary Pathologist*: animal pathology

COMMONWEALTH OF AUSTRALIA

D. Roche, B.V.Sc., *Veterinary Specialist Officer*: animal nutrition; beef cattle husbandry

A. F. Ryan, B.V.Sc., *Veterinary Parasitologist*: parasitology

F. B. Ryan, B.V.Sc., *Veterinary Officer*: infertility

R. I. Thain, M.R.C.V.S., *Veterinary Specialist Officer*: infertility

R. B. Thiessen, B.Sc.Agr., *Animal Research Officer*: beef cattle husbandry

3. Dairy Division

J. McLaren, H.D.D., *Chief Dairy Officer*: administration of division

B. A. Pike, B.Agr.Sc., *Dairy Bacteriologist*

H. V. Rees, B.Sc.Agr., *Senior Bacteriologist*: planning, supervising, carrying out dairy research

4. Entomology Division

L. W. Miller, M.Agr.Sc., *Chief Entomologist*: orchard pests; taxonomy of mites; general entomology

R. J. Hardy, B.Agr.Sc., *Entomologist*: pasture pests; clover seed moth

N. M. Hudson, B.Sc., *Entomologist*: orchard pests; taxonomy of scales

E. J. Martyn, M.Sc.Agr., *Senior Entomologist*: pasture pests; cereal pests; taxonomy of aphids

A. Terauds, B.Sc., *Entomologist*: orchard pests

5. Horticultural Division

W. F. Walker, N.D.Hort.Eng., *Chief Horticulturist*: administration of division

T. D. Raphael, M.A., Dip.Hort. (Cantab.), *Senior Horticulturist (Research)*: horticultural crops general nutrition and storage

B. M. Beattie, B.Agr.Sc., *Horticulturist*: vegetable crops general; culture and processing carrots and onions

B. D. Frappell, B.Agr.Sc., *Horticulturist*: vegetable crops general; green pea and bean processing; brassicas

C. R. Geard, B.Agr.Sc., *Horticulturist*: breeding, management and brewing quality of hops

J. C. Laughlin, B.Agr.Sc., B.Econ., *Horticulturist*: vegetables nutrition; pot culture; berry fruits

J. B. O'Loughlin, B.Agr.Sc., B.Econ., *Horticulturist*: pruning, storage, packaging of pome fruits

G. A. Oughton, B.Agr.Sc., *Manager, Forth Vegetable Research Farm*: vegetable crops management

R. R. Richards, B.Agr.Sc., *Horticulturist*: crop control; biennial bearing; nutrition pome and stone fruits

B. D. Richardson, B.Agr.Sc., *Horticulturist and Manager, Huon Horticultural Research Station*: root-stocks, pruning, pome fruits

6. Pigs

V. J. Fagan, H.D.A., Dip.Pub.Admin., *Senior Piggery Officer*

7. Plant Pathology Division

I. D. Geard, M.Agr.Sc., *Chief Plant Pathologist*: administration; general plant pathology; diseases of peas

G. R. Johnstone, B.Agr.Sc., *Plant Pathologist*: diseases of pome fruits, particularly virus diseases

D. Munro, B.Agr.Sc., *Plant Pathologist*: diseases of cereals and hops

P. J. Sampson, B.Agr.Sc., *Plant Pathologist*: diseases of potatoes

8. Sheep and Wool

- B. C. Jefferies, B.Agr.Sc., R.D.A., *Senior Sheep and Wool Officer*: face cover in sheep; birth coat score in sheep; sheep breeding projects; grazing management systems
J. R. Donnelly, B.Sc.Agr., *Sheep and Wool Officer*: stocking rate trials
R. R. Howe, H.D.A., *Sheep and Wool Officer*: fleece measurement

B. TASMANIAN FORESTRY COMMISSION

12 Murray Street, Hobart. Tel.: Hobart 303011

A. H. Crane, B.Sc., Dip.For., M.F., *Chief Commissioner*

1. Management Branch

- P. T. Unwin, Dip.For., *Management Officer*: general management
P. R. Lawrence, M.A., *Senior Research Officer*: management, mensuration
J. M. Bigg, M.A., *Working Plans Officer*: management

2. Silvicultural Branch

- J. M. Gilbert, Ph.D., B.For., Dip.For., *Silviculturist*: silviculture—eucalypt ecology
T. M. Cunningham, Ph.D., B.Sc., B.For., Dip.For., *Senior Research Officer*: eucalypt silviculture
W. J. B. Crane, B.For., Dip.For., *Assistant Research Officer*: silviculture of *Pinus radiata*
R. C. Ellis, B.Sc.For., M.Sc.For., *Research Officer*: eucalypt silviculture
A. B. Mount, B.For., M.Sc., Dip.For., *Research Officer*: eucalypt silviculture
J. N. Parker, B.Sc.For., M.F., *Forester*: farm forestry and shelter research

C. UNIVERSITY OF TASMANIA

Box 252 C, G.P.O., Hobart. Tel.: 2 7741

Agricultural Science Department

- G. C. Wade, M.Agr.Sc. (Melb.), D.Sc. (Tas.), *Professor of Agriculture*: fungal diseases of plants
J. A. Beattie, B.Sc.Agr. (Syd.), Ph.D. (Ore.), *Senior Lecturer in Soil Science*: soil chemistry
A. C. Bray, B.Sc.Agr. (W.A.), *Lecturer in Animal Production*: animal nutrition
K. C. Marshall, B.Sc.Agr. (Syd.), M.S., Ph.D. (Corn.), *Senior Lecturer in Agricultural Microbiology*: soil microbiology
J. J. Yates, B.Sc.Agr., Ph.D. (W.A.), *Senior Lecturer in Agronomy*: pasture agronomy

D. THE TASMANIAN MUSEUM AND ART GALLERY

G.P.O. Box 1166M, Hobart, Tasmania. Tel.: 2 6038

- W. Bryden, Ph.D. (Edin.), *Director*
P. Andrews, B.Sc. (Syd.): vertebrate zoology
R. A. Both, B.Sc. (Adel.): geology
A. J. Dartnall, B.Sc. (Dunelm): marine biology
Mrs. J. G. Greenhill, B.Sc. (Tas.): invertebrate zoology
Mrs. W. Hodgson, B.Sc. (Tas.): vertebrate zoology

COMMONWEALTH OF AUSTRALIA

VICTORIA

A. DEPARTMENT OF AGRICULTURE

Treasury Gardens, Melbourne, C.2. Tel.: 63 0321

1. Administrative Division

F. M. Read, M.Agr.Sc., *Director of Agriculture*
W. B. Miller, M.Agr.Sc., *Deputy Director of Agriculture*
R. O. Kefford, B.Agr.Sc., *Senior Executive Officer*
R. Jardine, B.Agr.Sc., Dip.Math.Stat. (Cantab.), *Biometrician*

(a) VICTORIAN PLANT RESEARCH INSTITUTE

S. Fish, M.Agr.Sc., *Chief Biologist, Head of Institute*
C. R. Millikan, M.Agr.Sc., D.Sc., *Deputy Chief Biologist: nutritional disorders*
T. W. Hogan, M.Agr.Sc., *Principal Entomologist: insect physiology*
L. L. Stubbs, D.Agr.Sc., *Principal Plant Pathologist: virus diseases of fruit and vegetables*
R. D. Anderson, B.Agr.Sc., *Senior Plant Pathologist: virus diseases of potatoes*
M. J. Byrne, B.Agr.Sc.Hons., *Entomologist: biological control*
S. C. Chambers, M.Sc., *Plant Pathologist: cereal root rots*
O. L. D. Crawford, M.Sc., *Senior Entomologist: biological control of insects and taxonomy*
S. Erlich, B.Agr.Sc., *Senior Entomologist: insect pests of pastures*
Miss Eileen E. Fisher, M.Sc., Ph.D. (Cantab.), *Senior Plant Pathologist: facial eczema and mycology*
B. C. Hanger, B.Agr.Sc., *Senior Plant Pathologist: nutritional disorders*
D. E. Harrison, M.Agr.Sc., *Senior Plant Pathologist: potato and onion diseases other than virus*
P. T. Jenkins, B.Agr.Sc., *Senior Plant Pathologist: fruit diseases; new fungicides*
L. C. Jones, B.Agr.Sc., *Senior Plant Pathologist: cereal diseases*
A. W. Kellock, B.Agr.Sc., *Agricultural Scientist: facial eczema, mycology*
R. W. Lennie, B.Agr.Sc., Dip.Chem., *Senior Entomologist: insect biochemistry*
J. R. Macfarlane, B.Agr.Sc., *Entomologist: insect physiology*
J. W. Meagher, B.Agr.Sc., *Senior Plant Pathologist: nematology*
D. S. Morris, B.Agr.Sc., *Senior Entomologist: insect pests of stone and pome fruits*
G. T. O'Loughlin, M.Sc., B.Agr.Sc., *Senior Entomologist: virus vectors*
R. G. Paddick, B.Agr.Sc., *Senior Plant Pathologist: tobacco diseases*
H. A. J. Pittman, B.Sc.Agr., B.A., Dip.Ed., *Senior Plant Pathologist: general plant pathology*
R. D. Price, B.Agr.Sc., *Senior Plant Pathologist: cereal diseases*
C. Reinganum, B.Sc., *Senior Plant Pathologist: virus diseases*
H. R. Schurr, B.Sc. (Glas.), *Senior Entomologist: pests of citrus vines and dried fruit*
P. G. B. Shelden, B.Agr.Sc., *Senior Entomologist: insect pests of vegetables and grains*
P. R. Smith, B.Agr.Sc., *Senior Plant Pathologist: diseases of vegetable crops*
R. H. Taylor, M.Agr.Sc., *Senior Plant Pathologist: virus diseases of vines and virus serology*
R. A. van Baer, B.Agr.Sc., *Senior Entomologist: insecticidal testing and potato pests*
D. G. Wauchope, B.Agr.Sc., *Senior Plant Pathologist: fruit diseases*
W. J. Webster, B.Sc., *Senior Entomologist: pests of stone and pome fruits*
H. B. Wilson, B.Sc.Hons., *Senior Entomologist: general entomology*

(b) CHEMICAL LABORATORY

- F. H. Williams, M.Sc., Dip.Ed., F.R.A.C.I., *Chief Chemist*: general direction chemical investigations
 E. J. O'Brien, B.Sc., F.R.A.C.I., *Deputy Chief Chemist*
 J. M. Addison, B.Sc., A.R.A.C.I., *Assistant Senior Chemist*: general agricultural chemistry
 R. S. Belcher, B.Sc., A.R.A.C.I., *Chemist*: pesticide investigations
 R. N. Cunningham, M.Sc., Ph.D., F.R.I.C., F.R.A.C.I., *Chemist*: pesticide analyses
 M. Fox, B.Sc., *Chemist*: animal feeds analyses
 G. R. Griffiths, B.Sc., *Chemist*: general agricultural chemistry
 A. F. Maloney, B.Sc., *Chemist*: wheat investigations
 K. C. Mander, A.M.T.C., A.R.A.C.I., *Chemist*: cereal investigations
 I. R. Minchinton, Dip.Chem., A.R.A.C.I., *Chemist*: trace element analyses
 W. Minett, B.Sc., *Chemist*: wheat investigations
 J. W. Newell, B.Sc., *Soils Officer*: soil surveys
 J. K. M. Skene, M.Agr.Sc., A.R.A.C.I., *Senior Chemist*: in charge, general agricultural chemistry
 W. I. Walbran, M.Sc., A.R.A.C.I., *Senior Chemist*: in charge, general agricultural chemistry
 F. M. Wallace, F.R.M.T.C., A.R.A.C.I., *Chemist*: barley quality

(c) AGRICULTURAL ECONOMICS BRANCH

- D. R. Meadley, B.Agr.Sc., D.D.A., *Senior Agricultural Economist*
 L. E. Cozens, M.Sc., B.Agr.Sc., Dip.Agr.Econ., *Senior Agricultural Economist*
 H. A. White, B.Agr.Sc., *Agricultural Economics Officer*
 R. L. Barnett, B.Agr.Sc., *Farm Survey Research Officer*
 R. G. Shoobridge, B.Com., Dip.Agr. (C.A.C.), Dip.V.F.M., *Farm Survey Research Officer*

(d) INFORMATION BRANCH

- C. G. Webb, M.Agr.Sc., Dip.Journ., *Information Officer*
 J. P. Brien, B.Agr.Sc., M.S. (Wis.), *Information Liaison Officer*
 G. G. Arthur, B.Agr.Sc., *Agricultural Research Officer*
 R. W. R. Miller, B.A., Dip.Agr.Sc. (Cantab.), *Agricultural Extension Officer*

2. Agricultural Division

- W. J. B. McDonald, B.Agr.Sc., *Superintendent of Agriculture, Head of Division*
 H. L. Hore, B.Agr.Sc., *Senior Inspector of Agriculture, Deputy Head of Division*

(a) CEREAL—AGRONOMY

- H. J. Sims, M.Agr.Sc., B.Com., *Senior Agronomist, Head of Branch*
 R. L. Amor, B.Agr.Sc., *Assistant Agricultural Research Officer*: soil fertility and wheat-belt pastures—Wimmera Region
 G. G. Collins, B.Agr.Sc., *Assistant Agricultural Research Officer*: cereals and soil fertility—Mallee Region
 B. R. Elliott, B.Agr.Sc., *Assistant Agricultural Research Officer*: cereals and soil fertility—Mallee Region
 J. M. Lumb, B.Agr.Sc., *Weeds Research Officer*: weeds in cereal crops
 J. McC. McCann, B.Agr.Sc., *Senior Cereal Research Officer*: cereal investigations
 V. F. McClelland, B.Agr.Sc., *Assistant Agricultural Research Officer*: cereals and soil fertility—Mallee Region
 J. B. McPherson, B.Agr.Sc., *Agronomist*: cereals and soil fertility—North-Eastern District
 N. K. McSwain, B.Agr.Sc., *Deputy Manager, Mallee Research Station, Walpeup*: cereal investigations—Mallee Region
 J. V. Mullaly, B.Agr.Sc., *Agronomist*: cereals and statistical design

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- C. T. Patton, B.Agr.Sc., *Agronomist*: cereals and wheat-belt pastures
G. H. Price, B.Agr.Sc., *Assistant Agricultural Research Officer*: cereals and soil fertility—Wimmera Region
D. R. Rooney, B.Agr.Sc., *Agronomist*: cereals and soil fertility—Wimmera Region
C. L. Tuohey, B.Agr.Sc., *Agricultural Research Officer*: cereals and soil fertility—Wimmera Region

(b) PASTURES

IRRIGATED

- K. R. Garland, M.Agr.Sc., *Senior Irrigation Officer, Head of Branch*
F. J. Barkla, B.Agr.Sc., *Irrigation Research Officer*: investigations on the range of irrigated crops
L. F. Bartels, M.Agr.Sc., *Irrigation Research Officer*: irrigation hydraulics and efficiency
G. O. Jones, B.Agr.Sc., *Irrigation Research Officer*: soil salinity, soil and pasture relations
P. D. Kelliher, B.Agr.Sc., *Irrigation Research Officer*: fertilizers, irrigation efficiency and pasture management
J. P. Murphy, B.Sc.Agr., *Irrigation Officer*: pasture management and spray irrigation
I. W. Norman, B.Agr.Sc., *Irrigation Officer*: soil salinity, soil and pasture relations—Gippsland area
J. T. Rumble, B.Agr.Sc., *Irrigation Research Officer*: water penetration, annual pasture, summer fodders

UNIRRIGATED

- R. L. Twentyman, B.Agr.Sc., *Senior Agrostologist, Head of Branch*
J. W. Cade, B.Agr.Sc., *Agrostologist*: plant introduction, ecotypes
I. H. Cameron, B.Agr.Sc., *Agrostologist*: pasture investigations—North-East Victoria
B. C. Curnow, B.Agr.Sc., *Field Agrostologist*: pasture investigations—East Gippsland
R. R. Hedding, B.Agr.Sc., *Agrostologist*: pasture investigations—Central Victoria
W. J. Hosking, B.Agr.Sc., *District Agrostologist*: pasture investigations—West Gippsland
I. Krigel, M.Agr.Sc., *Assistant Agrostologist*: pasture plant nutriment investigations
A. A. McGowan, B.Agr.Sc., *Assistant Agrostologist*: pasture investigations—North-East Victoria
S. W. Margetts, B.Agr.Sc., *Agrostologist*: pasture investigations—Glenelg Region
R. J. Newman, B.Agr.Sc., *Agrostologist*: pasture establishment, trace elements
S. C. Powell, B.Agr.Sc., *Agrostologist*: plant introduction, pasture improvement
K. F. M. Reed, B.Agr.Sc., *Field Agrostologist*: pasture investigations—Corangamite-Barwon Region

SEED TESTING STATION

- Miss G. R. Easton, B.Sc., *Seeds Analyst, Head of Section*: seed germination and testing techniques
Mrs. E. M. Felfoldi, B.Agr.Sc. (Keszthely), *Assistant Seeds Analyst*: seed germination and testing techniques
Mrs. A. Wirubov, B.Agr.Sc. (Sofia), *Assistant Seeds Analyst*: seed germination and testing techniques
Mrs. J. H. Mullett, B.Agr.Sc., *Agricultural Scientist*: seed research

(c) PLANT BREEDING

- P. H. Debrett, B.Agr.Sc., D.P.A., *Cereal Geneticist (Acting Senior Geneticist)*: linseed and cereals, disease resistance
 M. J. Archer, B.Agr.Sc., *Assistant Geneticist*: wheat quality
 Miss G. B. Hotton, B.Agr.Sc., *Geneticist*: pasture grasses
 D. M. Leeuwrik, M.Agr.Sc. (Mich.), *Geneticist*: pasture legumes
 A. S. Lokos, B.Agr.Sc. (Bud.), *Geneticist*: barley
 Miss H. Nirk, B.Agr.Sc. (Stuttgart), *Geneticist*: tomatoes, disease resistance
 P. I. Pryke, B.Sc.Agr., *Geneticist (Vegetables)*: onions, beans
 H. J. W. Swaan, B.Agr.Sc. (Groningen), *Geneticist*: potatoes
 R. M. Young, B.Agr.Sc., *Geneticist*: wheat quality

(d) MISCELLANEOUS CROPS

FODDER CONSERVATION

- J. A. Morrow, B.Agr.Sc., *Senior District Agricultural Officer*: silage and meadow hay
 E. K. Simmons, B.Agr.Sc., *Agronomist (Fodder Conservation)*: silage and meadow hay
 P. C. Medling, B.Agr.Sc., *Agricultural Research Officer*: silage and meadow hay

POTATOES

- G. H. Mattingley, D.D.A., *Potato Expert*: potato culture, seed certification
 W. A. Downie, B.Agr.Sc., *Agricultural Research Officer*: potato varieties, fertilizers, quality, storage

TOBACCO

- F. L. French, B.Agr.Sc., *Senior Tobacco Agronomist, Head of Branch*: tobacco nutrition and culture

(e) RESEARCH STATIONS

IRRIGATION RESEARCH STATION, KYABRAM

- F. M. Martin, B.Agr.Sc., *Manager*

MALLEE RESEARCH STATION, WALPEUP

- A. P. Mann, B.Agr.Sc., *Manager*

STATE POTATO RESEARCH STATION, HEALESVILLE

- L. J. Harmsworth, B.Agr.Sc., *Manager*

RUTHERGLEN RESEARCH STATION, RUTHERGLEN

- J. G. Bath, M.Agr.Sc., *Manager*

STATE RESEARCH FARM, WERRIBEE

- C. P. Goulding, B.Agr.Sc., *Manager*

TOBACCO RESEARCH STATION, MYRTLEFORD

- R. H. Rowan, B.Agr.Sc., *Manager*

3. Agricultural Education Division

- E. T. Beruldsen, B.Sc.Agr., *Superintendent of Agricultural Education, Head of Division*
 J. L. Provan, B.Agr.Sc., *Principal, Dookie Agricultural College*
 C. P. Cook, B.A., B.Ed., *Principal, Longerenong Agricultural College*
 T. H. Kneen, B.Agr.Sc., Dip.Ed., *Principal, Burnley Horticultural College*

4. Dairying Division

- T. M. Jensen, B.Agr.Sc., *Superintendent of Dairying and Head of Division*
 K. M. Sillcock, B.Agr.Sc., *Senior Inspector of Dairying*: research administration

COMMONWEALTH OF AUSTRALIA

- R. I. Howey, B.Agr.Sc. Dairy Tech. (N.Z.), *Principal, Gilbert Chandler Institute of Dairy Technology, and Chief Dairy Research Officer*
B. C. Baker, B.Sc., *Dairy Research Officer: dairy technology*
C. A. Bevan, B.Agr.Sc. Dairy Tech. (N.Z.), *Senior Milk Products Officer: dairy technology*
C. J. Bradbury, B.Agr.Sc., *Senior Supervisor of Herd Testing: dairy herd recording and improvement*
R. A. Burt, B.Sc. Dairying (R'dg.), *Senior Dairy Science Officer: city milk supervision*
I. C. Curtis, B.Food Tech., *Assistant Milk Products Officer: dairy technology*
B. D. Dixon, B.Agr.Sc. Dairy Tech. (N.Z.), *Dairy Research Officer: dairy technology*
H. P. Edgoose, B.Agr.Sc., *Dairy Husbandry Officer: dairy farm management*
L. J. Erwin, B.Agr.Sc., Dip.Ed., *Dairy Research Officer (Biochemist): dairy technology*
K. E. Flynn, B.Agr.Sc., *Dairy Husbandry Officer: dairy farm management*
W. C. V. Gerrish, B.Agr.Sc., *Assistant Dairy Husbandry Officer: dairy farm management*
W. I. D. Gilmour, B.Agr.Sc., *Assistant Dairy Husbandry Officer: dairy farm management*
A. T. Griffin, B.Food.Tech., *Dairy Research Officer: dairy technology*
R. A. S. Lawson, M.Agr.Sc., *Assistant Dairy Husbandry Officer: dairy farm management*
G. T. Lloyd, B.Sc. (Birm.), Ph.D. (Wales), *Dairy Research Officer: dairy technology*
T. N. Maclean, B.Agr.Sc., *Supervisor of Herd Testing: dairy herd recording and improvement*
K. L. McMillan, M.Agr.Sc., *Assistant Dairy Husbandry Officer: dairy farm management*
G. A. Mein, B.Agr.Sc., *Assistant Dairy Husbandry Officer: machine milking*
D. J. Myers, M.Agr.Sc., *Dairy Husbandry Officer: dairy farm management*
E. Neff, B.Food.Tech., *Assistant Milk Products Officer: dairy technology*
M. J. O'Neil, B.Agr.Sc., *Assistant Dairy Husbandry Officer: farm management*
R. F. Pitman, B.Agr.Sc., *Assistant Dairy Husbandry Officer: farm management*

5. Horticulture Division

Melbourne

- C. E. Cole, B.Agr.Sc., *Superintendent of Horticulture, Head of Division*
R. S. Harper, B.Agr.Sc., *Senior Inspector of Horticulture, Deputy Head*

Mildura

Civic Buildings, Deakin Avenue, Mildura. Tel.: Mildura 30256

- W. I. Nankivell, B.Agr.Sc., *Senior District Horticultural Officer: citrus, vines*
J. G. Baldwin, B.Agr.Sc., B.Sc., *Senior Irrigation Officer: irrigation, drainage*
R. T. J. Webber, B.Agr.Sc., Dip.Ed., *District Horticultural Officer: research liaison*

Robinvale

Department of Agriculture, Robinvale. Tel.: Robinvale 144

- A. J. Heslop, L.D.A., *Experimental Officer: vines*

Swan Hill

Public Offices, McCallum Street, Swan Hill. Tel.: Swan Hill 22627

- R. Sloane, B.Sc.Hort. (R'dg.), *Horticultural Research Officer: deciduous tree fruits, citrus, vines*

(a) COOL STORAGE RESEARCH SECTION

Scoresby Horticultural Research Station, Burwood Highway, Ferntree Gully.
Tel.: 231-2233

G. B. Tindale, B.Agr.Sc., *Senior Cool Storage Research Officer*

I. D. Pegg, B.Agr.Sc., *Horticultural Research Officer*

(b) RESEARCH BRANCH, Melbourne

R. A. Mullett, B.Agr.Sc., *Senior Horticultural Research Officer, Head of Branch: plant physiology*

P. Baxter, M.Agr.Sc., *Horticultural Research Officer: deciduous tree fruits, citrus, nutrition, soil management*

W. J. Packer, B.Sc. (Corn.), *Horticultural Research Officer: deciduous tree fruits, citrus, soil management, irrigation, rootstocks*

N. Veinbrants, Agron. (Riga), *Horticultural Research Officer: deciduous tree fruits, growth regulators*

RESEARCH STATIONS

Horticultural Research Station, Tatura. Tel.: Tatura 34

K. L. Avent, B.Agr.Sc., *Manager*

A. C. Bakker, B.Agr.Sc., Dip.Hort., *Horticultural Research Officer: soil water movement, drainage*

B. Cockroft, M.Agr.Sc., *Senior Irrigation Officer: soil physics, soil management, water movement in soils*

A. Czerkaskyj, Ing.Agr. (Warsaw), *Horticultural Research Officer: fruit technology*

P. H. Jerie, B.Agr.Sc., *Horticultural Research Officer: deciduous tree fruits, growth regulators*

J. C. R. Keatley, B.Agr.Sc., *Horticultural Research Officer: deciduous tree fruits, nutrition, growth regulators*

G. J. Kidman, D.D.A., *Experimental Officer: deciduous tree fruits, nutrition, crop control*

K. A. Olsson, B.Agr.Sc., *Horticultural Research Officer: soil physics, soil management*

A. Selimi, Ingr.Agr. (Zagreb), *Horticultural Research Officer: soil management, pomology*

B. K. Taylor, B.Agr.Sc., *Horticultural Research Officer: deciduous tree fruits, plant physiology, nutrition*

L. A. G. van Heek, Dip.Hort., *Experimental Officer: deciduous tree fruits, fruit quality, canning technology*

Scoresby Horticultural Research Station

Burwood Highway, Ferntree Gully. Tel.: 231-2233

C. R. Brough, B.Agr.Sc., D.D.A., *Manager*

J. D. F. Black, B.Agr.Sc., *Horticultural Research Officer: deciduous tree fruits, soil management, soil physics, nutrition*

S. D. Filipovic, D.Agr.Sc. (Bonn.), *Horticultural Research Officer: deciduous tree fruits, plant physiology, stock-scion relationship*

V. O. Grasmanis, Agron (Riga), M.Agr.Sc. (Melb.), *Horticultural Research Officer: deciduous tree fruits, nutrition, plant physiology*

Mrs. J. C. Lundmark, B.Agr.Sc., *Horticultural Research Officer: deciduous tree fruits, nutrition, plant physiology*

P. D. Mitchell, L.D.A., *Experimental Officer: deciduous tree fruits, irrigation, soil management*

R. N. Rowe, B.Agr.Sc., Ph.D. (Calif.), *Horticultural Research Officer: deciduous tree fruits, soil water-plant relationship, berry fruits*

D. W. West, B.Agr.Sc., *Horticultural Research Officer: soil physics*

COMMONWEALTH OF AUSTRALIA

Viticultural Station, Rutherglen. Tel.: Rutherglen 18
A. W. Allan, R.D.A., *Manager*: rootstocks, soil management, oenology

(c) INSTRUCTION BRANCH

G. W. Gayford, B.Agr.Sc., *Senior Horticultural Instructor, Head of Branch*
K. B. Higgins, B.Agr.Sc., *Horticultural Instructor*: research—liaison
J. E. Kenez, Dr.Agron. (Royal Hung. Univ.), *Horticultural Instructor*: research—liaison

Shepparton

Public Offices, Shepparton. Tel.: Shepparton 9349
B. H. Bailey, B.Agr.Sc., *District Horticultural Officer*: research—liaison

(d) VEGETABLE BRANCH

M. N. Kinsella, B.Agr.Sc., M.Sc. (Calif.), *Agronomist (Vegetables), Head of Branch*
A. S. Morgans, B.Sc.Hort. (Nott.), *Horticultural Research Officer*: vegetable, weed control

Vegetable Research Station, Frankston Bullarto Road, Frankston

T. J. Piggott, B.Agr.Sc., *Officer-in-Charge*: vegetables—nutrition

6. Livestock Division

A. R. Grayson, B.V.Sc., *Chief Veterinary Inspector and Head of Division*
D. M. Flynn, B.V.Sc., *Senior Veterinary Officer*

(a) ANIMAL HUSBANDRY

A. C. T. Hewitt, M.Agr.Sc., *Livestock Science Officer*: animal husbandry

(b) ANIMAL HUSBANDRY RESEARCH

D. S. Wishart, B.V.Sc., *Senior Veterinary Research Officer and Head of Branch*

(i) *S.S. Cameron Animal Research Laboratory, Werribee*
Tel.: Werribee 801

L. P. Prewett, B.V.Sc., *Officer-in-Charge*
J. C. Banfield, D.D.A., *Experimental Officer*: artificial insemination
B. E. Bartlett, B.Agr.Sc., H.D.A., *Livestock Research Officer*: poultry research
R. M. Carraill, B.Agr.Sc., *Livestock Research Officer*: beef cattle husbandry
I. F. Davis, B.Agr.Sc., *Livestock Research Officer*: sheep nutrition and wool growth
J. J. Doyle, B.Agr.Sc., *Livestock Research Officer*: sheep nutrition
A. R. Evans, B.Sc.Agr., M.Sc., *Livestock Research Officer*: poultry research
C. J. Gyory, A.R.A.C.I., Dip.Chem., *Chemist*: animal nutrition
R. W. Hodge, B.Agr.Sc., *Livestock Research Officer*: lamb nutrition
Miss B. A. Houston, B.Sc., *Bacteriologist*: cattle infertility
J. W. McDonald, B.V.Sc., *Veterinary Officer*: sheep fertility
A. D. North, B.Agr.Sc., *Livestock Research Officer*: minimal disease pigs
J. R. Oke, B.Agr.Sc., *Livestock Research Officer*: beef cattle performance recording
M. J. Sharkey, B.Agr.Sc., *Livestock Research Officer*: sheep nutrition and wool growth
G. F. Vivian, B.Agr.Sc., *Livestock Research Officer*: beef cattle nutrition
J. J. Walker, B.Agr.Sc., *Livestock Research Officer*: beef cattle production
R. H. Watson, D.Agr.Sc., *Senior Livestock Research Officer*: animal physiology
M. B. White, B.V.Sc., M.R.C.V.S., *Veterinary Officer*: artificial insemination

(ii) *Ellinbank Dairy Research Station, Warragul*

Tel.: Warragul South 209 and 320

A. Higgins, B.Agr.Sc., *Officer-in-Charge*

A. J. Humphris, B.Agr.Sc., *Livestock Research Officer*: dairy beef production

R. Sammons, B.Agr.Sc., *Livestock Research Officer*: dairy cattle nutrition

J. A. Stewart, M.Agr.Sc., *Livestock Research Officer*: dairy cattle nutrition

J. Whan, D.D.A., *Experimental Officer*: dairy cattle nutrition

(iii) *Pastoral Research Station, Hamilton*

Tel.: Hamilton 1714

A. H. Bishop, B.Agr.Sc., *Officer-in-Charge*

H. A. Birrell, B.Agr.Sc., *Livestock Research Officer*: sheep nutrition

T. D. Kentish, B.Agr.Sc., *Livestock Research Officer*: sheep nutrition

J. W. McLaughlin, B.Agr.Sc., *Livestock Research Officer*: sheep nutrition

(c) **APICULTURE**

D. F. Langridge, B.Agr.Sc., *Livestock Research Officer*: apiculture

(d) **DISEASE INVESTIGATION**

J. Craven, B.V.Sc., *Veterinary Officer*: *E. coli* infections in livestock

E. Finnie, B.V.Sc., *Veterinary Officer*: acid fast organism infections in livestock

R. P. Herd, B.V.Sc., *Veterinary Officer*: investigation grass tetany in cattle

D. S. McQueen, B.V.Sc., *Veterinary Officer*: investigation and control Johne's disease

B. H. Rushford, B.V.Sc., *Veterinary Officer*: investigation brucellosis in sheep and investigation non-specific reactors to tuberculin test

A. D. Walsh, B.V.Sc., *Veterinary Officer*: investigation facial eczema in sheep

N. A. M. Wellington, B.V.Sc., *Veterinary Officer*: investigation and control skin tuberculosis

(e) **PIGS**

L. A. Downey, H.D.A., *Pig Expert*: pig husbandry

(f) **POULTRY**

W. C. Stanhope, B.Agr.Sc., *Senior Poultry Advisory Officer*: poultry husbandry, breeding practices poultry

G. S. Bradbury, B.Agr.Sc., *Assistant Livestock Science Officer*: random sample laying test

E. J. Dark, B.Agr.Sc., *Poultry Advisory Officer*: poultry husbandry

(g) **SHEEP AND WOOL**

P. G. Hyland, B.Agr.Sc., *Senior Sheep and Wool Officer*: sheep research projects

T. J. Beaumont, B.Agr.Sc., *Sheep and Wool Officer*: sheep husbandry

D. J. Cannon, B.Agr.Sc., *Sheep and Wool Officer*: sheep husbandry

N. M. Elliott, B.Agr.Sc., *Sheep and Wool Officer*: sheep husbandry

M. V. Frew, B.Agr.Sc., *Sheep and Wool Officer*: sheep husbandry

J. Heath, B.Agr.Sc., *Sheep and Wool Officer*: sheep husbandry

D. Lear, B.Agr.Sc., *Sheep and Wool Officer*: sheep husbandry

B. J. McConchie, B.Agr.Sc., *Sheep and Wool Officer*: sheep husbandry

H. Russell, M.Agr.Sc., *Sheep and Wool Officer*: sheep husbandry

I. Thomas, B.Agr.Sc., *Sheep and Wool Officer*: sheep husbandry

B. DEPARTMENT OF CROWN LANDS AND SURVEY

1. Vermin and Noxious Weeds Destruction Board

The Keith Turnbull Research Station, Bullarto Road, Frankston, Vic. Tel.: Frankston 3 5241

G. W. Douglas, B.Agr.Sc., *Deputy Chairman*

COMMONWEALTH OF AUSTRALIA

2. Inspection Branch

The Keith Turnbull Research Station, Bullarto Road, Frankston, Vic. Tel.:
Frankston 3 5241

(a) NOXIOUS WEEDS RESEARCH

W. T. Parsons, B.Agr.Sc.

T. W. Donaldson, B.Agr.Sc.

L. Schmidl, Dip.Agr. (Bud.)

(b) VERMIN RESEARCH

B. R. G. Woodfield, B.Agr.Sc., Dip.Agr.

3. Royal Botanic Gardens

South Yarra, Vic. Tel.: 63 7030

R. T. M. Pescott, M.Agr.Sc., *Director and Government Botanist*

NATIONAL HERBARIUM

J. H. Willis, B.Sc., *Assistant Government Botanist*

R. V. Smith, B.Sc.

A. B. Court, B.Sc.

Miss H. I. Aston, B.Sc.

T. B. Muir, B.Sc.

C. FORESTS COMMISSION OF VICTORIA

453 Latrobe Street, Melbourne C.1., Tel.: 60 0361. Cables: Forestcom,
Melbourne

A. O. P. Lawrence, B.Sc., Dip.For. (Oxon.), Dip.For. (Canb.), *Chairman and
Permanent Head*

1. Division of Forestry Education and Research

R. J. Grose, B.Sc.For. (Melb.), Ph.D. (Melb.), *Chief of Division*

(i) ENTOMOLOGY SECTION

C. J. Irvine, B.Sc. (Melb.), *Entomologist and Research Officer*: forest entomology
research and biological survey

(ii) HYDROLOGY SECTION

H. L. Teller, B.Sc.For. (Melb.), M.F. (Yale), Ph.D. (Wash.), *Research Officer*

F. G. Craig, B.Sc.For. (Melb.), *Forester Grade 1*: forest hydrology

(iii) PATHOLOGY SECTION

G. C. Marks, B.Sc. (Cey.), M.Sc. (Wis.), Ph.D. (Wis.), *Forest Pathologist*:
forest pathology

(iv) SILVICULTURE SECTION

J. B. Jack, B.Sc.For. (Melb.), *Chief Silvicultural Research Officer and Branch
Head*

B. D. Dexter, B.Sc.For. (Melb.), *Research Officer*: silviculture of indigenous
hardwoods

B. F. Gibson, B.Sc.For. (Melb.), *Forester Grade 1*: forest tree improvement and
assigned economics research

L. A. Pederick, B.Sc.For. (Melb.), *Research Officer*: forest tree improvement

A. W. F. Webb, B.Sc.For. (Melb.), *Research Officer*: silviculture of indigenous
eucalypts and associated mesurational research

J. P. Wright, B.Sc.For. (Melb.), *Forester Grade 1*: silviculture of exotic conifers

2. Division of Forest Protection

E. D. Gill, Dip.For., *Chief of Division*

FIRE RESEARCH SECTION

A. Hodgson, B.Sc.For. (Melb.), *Fire Research Officer*: fire research

D. SOIL CONSERVATION AUTHORITY

"Heroncourt", Cotham Road, Kew, Victoria 80-1381

R. G. Downes, M.Agr.Sc., F.A.I.A.S., F.S.C.S. (Am.), *Chairman*: conservation ecology and hydrology

1. Research Division

Alex Mitchell, B.Agr.Sc., D.D.A., *Principal Research Officer*: conservation ecology; plants for erosion control; ecological effects of management on grazing-land

(a) SOIL, ECOLOGICAL AND LAND-USE SURVEYS

Land-classification on ecological basis; inter-relationships of environmental variables, and their integration and assessment for land-use purposes; publication of this data for various areas in Victoria.

Frank R. Gibbons, B.Sc. (Dunelm), *Senior Research Officer*: general application of ecological approach; significance of environmental inter-relationships for land-use purposes

J. N. Rowan, B.Agr.Sc., *Research Officer*: application of ecological approach in areas of low rainfall; salting problems

R. K. Rowe, B.Sc.For., *Research Officer*: application of ecological approach in mountainous forested areas; effects of forest fires

(b) LABORATORY

Physical and chemical soil analyses; water analyses; infiltration; farm-dam failures; soil salinity; leaching of nutrients.

T. I. Leslie, B.Sc., *Senior Research Officer*: chemical composition of rainwater and run-off in relation to land-use

A. Gyarmathy, B.Agr.Sc., *Research Officer*: farm-dam studies; physical properties of soils

U. Hagel, B.Sc. (Gotting.), *Research Officer*: soil analyses; infiltration studies; leaching of nutrients

(c) CONSERVATION HYDROLOGY

Studies on the complete hydrological cycle in catchments under various forms of use in different environments; continuous records of rainfall, temperature, humidity and run-off; periodic records of soil-moisture, plant cover and evaporation; features of catchments affecting run-off.

F. X. Dunin, B.Agr.Sc., *Research Officer*: in charge

H. C. Haskew, B.Sc.Agr., *Research Officer*

(d) CONSERVATION AGRONOMY

Study of plant materials and of their value and use for erosion-control.

S. Zallar, B.Agr.Sc. (Bud.), *Research Officer*: revegetation of eroded land—salted areas and sand-dunes

H. R. Jones, B.Sc.Agr., *Research Officer*: reclamation and improvement of eroded land

COMMONWEALTH OF AUSTRALIA

(e) CONSERVATION ECONOMICS

Economic aspects of projects undertaken by the Authority.

- I. Molnar, Ph.D. (Bud.), M.Agr.Sc., *Senior Research Officer*: economic gains from soil conservation; appraisal of economic factors affecting soil conservation

E. STATE RIVERS AND WATER SUPPLY COMMISSION

90 Orrong Road, Armadale, S.E.3. Victoria. Tel.: 50 8511 Cables: Water-com, Melb.

- A. L. Tisdall, M.Agr.Sc. (Melb.), *Chairman*
R. A. Horsfall, M.B.E., M.C.E., B.Mech.E. (Melb.), *Deputy Chairman*
K. D. Green, O.B.E., E.D., B.C.E. (Melb.), *Commissioner*
G. W. Lewis, *Secretary*

Rural Water Supplies Branch

IRRIGATION RESEARCH SECTION

- W. P. Dunk, M.Agr.Sc. (Melb.), *Chief Irrigation Officer*
S. M. Bill, B.Sc. (Melb.), Dip.For.: weed control
S. F. Bridley, B.Agr.Sc. (Melb.): groundwater
A. R. Coad, M.A. (Cantab.): drainage
E. Felfoldi, B.Agr.Sc. (Bud.): groundwater
W. A. E. Graham, B.Agr.Sc. (Melb.): weed control
L. D. Jones, B.Agr.Sc. (Melb.): water use
E. P. Robinson, B.Agr.Sc. (Melb.): water use
B. Tierney, B.Agr.Sc. (Melb.): water use
W. N. Trehwella, B.C.E. (Melb.): water use
A. Webster, B.Sc.Agr. (R'dg.): drainage
B. J. Woodruff, B.Sc.F. (Melb.): advisory

F. UNIVERSITY OF MELBOURNE

1. School of Agriculture

Parkville, N.2. Tel.: 34 0484

- H. C. Forster, M.Agr.Sc., Ph.D. (Iowa), *Professor*: agronomy
Miss Yvonne Aitken, M.Agr.Sc., *Senior Lecturer*: agriculture, developmental physiology
R. G. Beilharz, M.Agr.Sc. (Syd.), Ph.D. (Iowa), *Lecturer*: animal breeding
A. G. Lloyd, B.Ec. (Syd.), *Senior Lecturer*: agricultural economics
G. R. Pearce, B.Sc.Agr., Ph.D. (W.A.), *Lecturer*: ruminant nutrition
H. A. Presser, B.A., *Senior Lecturer*: rural sociology
D. F. Smith, M.Agr.Sc. (Adel.), *Senior Lecturer*: agronomy, pastures
B. A. Stone, B.Sc., Ph.D. (Lond.), *Senior Lecturer*: agricultural biochemistry
N. H. Sturgess, M.Agr.Sc. (New Eng.), *Lecturer*: agricultural economics
D. E. Tribe, B.Sc.Agr. (R'dg.), Ph.D. (Aberd.), D.Agr.Sc. (Melb.), *Reader*: animal physiology and production
N. M. Tulloh, M.Agr.Sc., Ph.D., *Senior Lecturer*: animal husbandry, beef cattle
D. B. Williams, B.Sc.Agr., B.Com., M.S., Ph.D., *Visiting Professor*: agricultural economics
J. H. Wilson, B.Agr.Sc., Ph.D. (Lond.), *Senior Lecturer*: agriculture, crop growth studies

2. Department of Agricultural Chemistry

Parkville, N.2. Tel.: 34 0484

- G. W. Leeper, M.Sc., *Professor*: agricultural chemistry
G. P. Briner, B.Sc. (W.A.), M.Sc. (New Eng.), Ph.D. *Lecturer*: agricultural chemistry
L. H. P. Jones, B.Agr.Sc., Ph.D., *Honorary Lecturer*: agricultural chemistry

3. Department of Agricultural Engineering

Parkville, N.2. Tel.: 34 0484

- G. H. Vasey, B.C.E., *Reader*: machinery, tractors
 W. F. Baillie, Dip.Mech.E., Dip.Elec.E., *Tractor Testing Officer*
 R. H. Cochrane, M.A. (Cantab.), *Lecturer*: farm mechanization
 A. K. Turner, B.C.E., M.E., *Senior Lecturer*: hydrology

4. The Russell Grimwade School of Biochemistry

Parkville, N.2. Tel.: 34 0484

- V. M. Trikojus, D.Phil. (Oxon.), D.Sc. (Syd.), F.A.A., *Professor and Head of School*: endocrinology, plant goitrogens
 P. R. Carnegie, B.Sc. (St. And.), Ph.D. (Aberd.), *Senior Lecturer*: low molecular weight compounds in wheat flour
 F. J. R. Hird, M.Agr.Sc., Ph.D. (Cantab.), *Professor*: fatty acid metabolism in the sheep; wheat proteins
 G. R. Jago, Ph.D., H.D.D., B.Sc. (Syd.), *Senior Research Fellow*: proteolytic and other enzymes in *Streptococcus lactis* in reference to cheese production
 Miss M. T. McQuillan, Ph.D., M.Sc., *Senior Lecturer*: endocrinology
 B. A. Stone, Ph.D. (Lond.), B.Sc., *Senior Lecturer in Agricultural Biochemistry*: chemistry and biochemistry of the cell wall in plants and bacteria
 Mrs. P. E. E. Todd, Ph.D., B.Sc., *Lecturer*: endocrinology

5. Botany School

Parkville, N.2. Tel.: 34 0484

- J. S. Turner, M.A. (Cantab.), Ph.D. (Cantab.), M.Sc., F.A.A., *Professor*: plant physiology, with special reference to respiration, Pasteur effect, translocation of C^{14} compounds, photosynthesis
 D. H. Ashton, B.Sc., Ph.D., *Senior Lecturer*: ecology, with special reference to *Eucalyptus* forests
 J. G. Bacskai, Ph.D. (Szeged): palynology
 Miss M. Blackwood, Ph.D. (Cantab.), M.Sc., *Senior Lecturer*: cytology and genetics of maize
 D. M. Calder, B.Sc. (Cant., N.Z.), M.Sc. (N.Z.), Ph.D. (Wales), *Senior Lecturer*: developmental physiology of grasses
 T. C. Chambers, M.Sc. (N.Z.), Ph.D. (Syd.), *Senior Lecturer*: electron microscopy, fine structure of cells, cytotaxonomy of ferns
 Miss I. C. Cookson, D.Sc., *Research Fellow*: palaeobotany, micropalaeontology of plankton and of spores
 Miss N. H. Corbett, Ph.D., D.I.C. (Lond.), M.Sc., *Senior Demonstrator*: mycology, decay of timber by soft-rot fungi, plant physiology
 Mrs. S. C. Ducker, M.Sc., *Senior Lecturer*: soil fungi, Mucorales, freshwater and marine algae
 Miss S. L. Duigan, Ph.D. (Cantab.), M.Sc., *Senior Lecturer*: palaeobotany, anatomy of fossil wood, tertiary fossil spores
 Miss E. I. McLennan, D.Sc., *Keeper of Herbarium*: mycology
 E. A. F. Matthaei, Dip.Opt. (Jena), *Senior Lecturer*: fluorescence microscopy and other microscopical techniques
 T. F. Neales, M.A. (Oxon.), Ph.D. (Lond.), *Senior Lecturer*: mineral nutrition of plants, role of boron in plants, physiology of wheat
 D. G. Parbery, B.Sc.Agr. (Syd.), M.Agr.Sc. (Q'ld.), *Lecturer*: mycology and plant pathology, taxonomy of pathogenic fungi, gramminicolous fungi, the genera *Phyllachora*—*Helminthosporium*
 K. S. Rowan, Ph.D. (Cantab.), M.Sc., *Senior Lecturer*: organic phosphorus compounds in respiration and fruit ripening, growth hormones
 V. Sarafis, B.Sc. (Lond.), A.L.S., *Senior Demonstrator*: morphogenetics of Bryophyta

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Mrs. I. G. Stone, M.Sc., Ph.D., *Senior Demonstrator*: anatomy of fern prothalli
H. J. Swart, B.Sc. (Utrecht), M.Sc. Doctorate (Utrecht), *Senior Lecturer*:
morphology, taxonomy of fungi, ecology of soil fungi
Mrs. G. M. Weste, M.Sc., *Assistant Lecturer*: mycology

6. School of Forestry

Parkville, N.2. Tel.: 34 0484 Ext.: 607, 475. Cables: Unimelb, Parkville

J. H. Chinner, B.Sc. (Oxon.), B.Sc. (Melb.), Dip.For. (Vic.), *Reader-in-Charge*:
silviculture

A. J. Leslie, M.Sc.F. (Melb.), Dip.For. (Creswick), *Senior Lecturer*: economics
and management

J. A. Howard, B.Sc. (Wales.), M.F. (Minn.), Dip.For., F.L.S., F.R.E.S.,
A.M.A.I.C., *Senior Lecturer*: aerial photo-interpretation and forest mensuration

7. Department of Physiology

Parkville, N.2. Tel.: 34 0484

R. D. Wright, M.B., M.S., D.Sc., F.R.A.C.P., *Head of Department*: integration
of neural and humoral factors determining total body sodium status

W. T. Agar, B.Sc. (Melb. & Oxon.), M.B., B.S.: the occurrence of toxic symptoms
in farm animals from excess magnesium salts in underground water

J. R. Blair-West, M.Sc., Ph.D.: regulation of aldosterone secretion; regulation
of blood pressure

Miss E. A. Bott, M.Sc.: factors affecting sodium appetite of sheep

J. P. Coghlan, M.Sc., Ph.D.: development of radio-isotope assay for corti-
costeroids and androgens; regulation of total body sodium

D. A. Denton, M.B., B.S.: behavioural aspects of fluctuations of sodium balance;
neuro-endocrine factors affecting sodium homeostasis

J. R. Goding, M.B., B.S.: developmental surgery for transplantation of organs
and regulation of aldosterone secretion

B. A. Scoggins, M.Agr.Sc.: metabolic clearance rate of corticosteroids

Mrs. S. Weller, M.Sc.: factors affecting sodium appetite of sheep

8. Veterinary Research Institute

Parkville, N.2. Tel.: 34 2141

E. M. Pullar, D.V.Sc., *Veterinary Pathologist, Director of Veterinary Research
Institute*

Mrs. S. D. Davis, B.Sc., *Assistant Biochemist*

Mrs. J. D. Eales, M.Sc., *Microbiologist (Milk Laboratory)*

C. J. R. Gorrie, B.V.Sc., *Senior Veterinary Research Officer*

Miss P. R. Harbutt, B.V.Sc., *Veterinary Pathologist*

T. E. Jones, B.V.Sc., *Senior Veterinary Pathologist*

D. D. Leaver, B.V.Sc., M.Sc., *Senior Veterinary Pathologist*

Mrs. N. H. Schuster, B.Sc., *Biochemist*

Mrs. M. E. Spry, B.Rur.Sc., *Assistant Biochemist*

Mrs. J. Swan, M.Sc., *Assistant Microbiologist (Milk Laboratory)*

J. B. Woolcock, B.V.Sc., *Veterinary Pathologist*

9. School of Veterinary Science

Parkville, N.2. Tel.: 34 8222

D. C. Blood, B.V.Sc. (Syd.), M.V.Sc. (Melb.), *Dean, Faculty of Veterinary
Science*

(a) DEPARTMENT OF VETERINARY PRE-CLINICAL SCIENCES

J. D. Steel, D.V.Sc. (Syd.), M.V.Sc. (Melb.), *Professor*: veterinary physiology

Sub-Department of Veterinary Anatomy

J. W. Watson, B.V.Sc. (Q'ld.), *Senior Lecturer*

Sub-Department of Veterinary Biochemistry

A. M. Snoswell, B.Sc., Ph.D. (Adel.), *Senior Lecturer*

(b) DEPARTMENT OF PARA-CLINICAL SCIENCES

K. V. F. Jubb, B.V.Sc. (Syd.), M.Sc., Ph.D. (Corn.), M.V.Sc. (Melb.), *Professor: veterinary pathology*

Sub-Department of Veterinary Microbiology

S. G. Campbell, B.V.M.S. (Glas.), M.V.Sc. (Tor.), Ph.D. (Corn.), M.R.C.V.S., *Senior Lecturer*

Sub-Department of Veterinary Parasitology

J. H. Arundel, B.V.Sc. (Syd.), *Senior Lecturer*

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Sub-Department of Veterinary Surgery

D. E. Johnston, B.V.Sc. (Syd.), M.V.Sc. (Tor.), *Senior Lecturer*

Sub-Department of Animal Reproduction

D. B. Galloway, B.V.Sc. (Syd.), V.M.D., F.R.V.C. (Stock.), *Senior Lecturer*

10. Department of Zoology

Parkville, N.2. Tel.: 34 0484

G. Burnstock, Ph.D. (Lond.), M.Sc., *Professor of Zoology*

N. V. Dobrotworsky, M.Sc., Ph.D.: a systematic and ecological study of the family Tipulidae (Diptera) with special reference to their potentiality as pests of pasture

G. MONASH UNIVERSITY

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Clayton, Vic. Tel.: 544 0611. Cables: Monashuni, Melbourne

M. J. P. Canny, M.A., Ph.D. (Cantab.), *Professor of Botany, Chairman of the Department*

D. M. Churchill, B.Sc., Ph.D. (W.A.), M.A. (Cantab.), *Senior Lecturer*

D. F. Gaff, M.Sc., Ph.D. (Melb.), *Lecturer*

A. A. Holland, M.Sc., Ph.D. (W.A.), *Senior Lecturer*

2. Department of Economics

Clayton, Vic. Tel.: 544 0611. Cables: Monashuni, Melbourne

F. H. G. Gruen, B.A., B.Com. (Melb.), M.S. (Wis.), *Professor of Agricultural Economics*

A. A. Powell, B.Sc.Agr., Ph.D. (Syd.), *Senior Lecturer*

3. Department of Zoology

Clayton, Vic. Tel.: 544 0611. Cables: Monashuni, Melbourne

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E. H. M. Ealey, M.Sc. (Syd.), Ph.D. (W.A.), *Senior Lecturer*

G. Ettershank, M.Sc. (Q'ld.), Ph.D. (Corn.), *Senior Lecturer*

A. K. Lee, M.A., Ph.D. (Calif.), *Lecturer*

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A. R. McEvey, B.A., *Curator of Birds*

J. Hope Black, M.Sc., *Consultant in Mollusca*

Miss Joan M. Dixon, B.Sc., *Scientific Officer—Vertebrates*

2. Geology Section

A. W. Beasley, M.Sc., Ph.D., D.I.C., *Curator of Minerals*

T. A. Darragh, B.Sc., Dip.Ed., *Curator of Fossils*

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Vacant: *Curator of Anthropology*

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F. L. Shier, B.Sc.Agr., *Deputy Director of Agriculture*

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J. Shilkin, B.V.Sc., H.D.A., *Assistant Chief Veterinary Surgeon*

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W. J. Wilkie, B.V.Sc., *Senior Animal Husbandry Adviser*

D. J. Barker, B.V.Sc., M.R.C.V.S.: beef cattle research

N. W. Godfrey, M.Sc.Agr.: animal nutrition

(iii) ANIMAL HEALTH LABORATORY

M. R. Gardiner, B.S., Chem.Eng.V.M.D., *Chief Veterinary Pathologist*: sheep lupinosis, clover disease, urinary calculus, toxic plants

R. W. Butler, B.V.Sc., *Senior Veterinary Parasitologist*: sheep and cattle parasitism

M. C. Nottle, M.Sc.Agr., *Research Officer*: rumen microbiology, urinary calculus

W. H. Parr, Ph.D., *Biochemist*: sheep lupinosis, clover infertility syndromes

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R. H. Morris, B.Sc.Agr., *Officer-in-Charge, Poultry Branch*

R. J. Bishop, B.Sc.Agr.: poultry nutrition

(v) APICULTURE

F. G. D. Smith, D.Sc., B.Sc.For., N.D.B., F.R.E.S., *Senior Apiculturist*

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T. E. H. Aplin, B.Sc.: toxic plants of genera *Oxylobium* and *Gastrolobium*

A. S. George, B.A.: systematics of W.A. flora

Miss E. M. Scrymgeour, B.Sc.: systematics of W.A. flora

P. G. Wilson, B.Sc.: systematics of W.A. flora

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J. A. Button, B.Sc.Agr.: pasture pests and general entomology

S. J. Curry, M.A., Dip.Agr.Sc.: forest entomology

D. L. Hardy, B.Sc.: tropical and general entomology

P. J. Michael, B.Sc.: general entomology

K. T. Richards, B.Sc.Agr.: general entomology

G. D. Rimes, B.Sc.: horticulture and general entomology

D. G. Shedley, B.Sc.Agr.: tropical entomology

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Miss O. M. Goss, B.Sc.Hons.: nematology, general plant pathology

G. C. Macnish, B.A., B.Sc.Agr.: vegetable diseases

W. A. Shipton, B.Sc.Agr., Ph.D.: cereal diseases, legume inoculation

(iv) SEED CERTIFICATION AND WEEDS CONTROL BRANCH

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G. A. Pearce, M.Sc.Agr.: weed control

B. J. Quinlivan, B.A., M.Sc.Agr.: seed production and seed dormancy

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D. C. Hosking, B.Sc.: vegetables

W. R. Jamieson, Dip.Oen., *Viticulturist*

F. Melville, B.Sc.Agr.: fruit

K. T. Whitely, B.Sc.Agr.: fruit

5. North-West Division

W. M. Nunn, B.Sc.Agr., *Chief*

K. Fitzgerald, B.Sc.Agr.: pastoral ecology

H. Suijdendorp, B.Sc.Agr.: cotton agronomy

D. G. Wilcox, B.Sc.Agr.: pastoral ecology

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I. L. Berryman, B.Sc.: biometrics
J. W. Bowden, B.Sc.Agr.: soil testing
J. E. L. Cripps, B.A., B.Sc.Hort.: tree fruit culture
J. W. Gartrell, B.Sc.Agr.: plant nutrition, micronutrients
R. N. Glencross, B.Sc.Agr.: plant nutrition
N. J. Halse, M.Sc.Agr.: cereal crop physiology
J. Jago, B.Sc., A.R.A.C.I.: radioisotopes, soil phosphorus
M. G. Mason, B.Sc.Agr.: plant nutrition

7. Soils Division

- L. C. Lightfoot, B.Sc.Agr., *Chief and Commissioner of Soil Conservation*
C. V. Malcolm, M.Sc.Agr., *Research Officer*: salinity, agronomy of salt resistant plants
S. T. Smith, M.Sc.Agr., *Senior Soil Research Officer*: soil salinity wheat and fruit areas, salinity citrus and apple trees, soil moisture and irrigation
T. C. Stoneman, B.Sc.Agr., *Research Officer*: soil structure, soil moisture, salinity

8. Wheat and Sheep Division

- A. S. Wild, B.Sc.Agr., *Chief*
N. Davenport, B.Sc.Agr., *Assistant Chief*

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- W. J. Toms, B.Sc.Agr., *Agronomy and Experiment Officer*: cereal products, plant breeding, agronomy
H. M. Fisher, B.Sc.Agr.: cereal variety testing
J. L. McMullen, B.Sc.Hons., *Plant Breeder*: barley and oats
J. A. Parish, B.Sc.Agr.: cereal products
J. T. Reeves, M.Sc.Agr., *Plant Breeder*: wheat

(ii) SHEEP AND WOOL

- H. G. Neil, B.Sc.Agr., *Officer-in-Charge, Sheep and Wool*: sheep husbandry and wool production
K. P. Croker, B.Sc.Agr.: sheep husbandry and wool production
H. E. Fels, B.Sc.Agr.Hons.: sheep husbandry and wool production
R. J. Lightfoot, B.Sc.Agr.: sheep husbandry and wool production
I. G. Ralph, B.Sc.Agr.: sheep husbandry and wool production

9. Vermin Control Branch

- A. R. Tomlinson, *Chief Vermin Control Officer*
C. D. Gooding, B.Sc.Agr., *Vermin Control Research Officer*: control of mammal and bird pests
A. J. Oliver, B.Sc., A.R.C.S., F.R.E.S., *Biologist*: kangaroo ecology

10. Rural Economics and Marketing

- G. D. Oliver, B.A., *Officer-in-Charge*: rural economics and marketing
A. W. Hogstrom, B.Sc.Agr.: rural economics
I. J. Moncrieff, B.Sc.Agr.: rural economics

B. FORESTS DEPARTMENT

Rural and Industries Bank Building, Barrack Street, Perth. Tel.: 23 2011
W. H. Eastman, B.Sc.For., Dip.For. (Oxon.), *Research Superintendent*

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- (a) At FOREST RESEARCH LABORATORY, Thelma Street, Como, W.A. Tel.: 67 4811
 - I. S. Ferguson, B.Sc.For.: management research
 - A. B. Hatch, B.Sc., Dip.For., M.Sc.: soil and plant nutrition
 - E. R. Hopkins, B.Sc., Dip.For., Ph.D.: *Pinus pinaster* silviculture
- (b) At FOREST RESEARCH LABORATORY, Dwellingup, W.A. Tel.: Dwellingup 8
 - P. C. Kimber, B.Sc.For.: *Eucalyptus marginata* silviculture
- (c) At FOREST RESEARCH LABORATORY, Manjimup, W.A. Tel.: Manjimup 338
 - O. W. Loneragan, B.Sc.For., M.Sc.: *Eucalyptus diversicolor* silviculture
 - F. A. McKinnel, B.Sc.For.: *Pinus radiata* silviculture
 - G. B. Peet, B.Sc.For.: forest fire research

C. UNIVERSITY OF WESTERN AUSTRALIA

1. Institute of Agriculture

Nedlands. Tel.: Perth 86-1803 and 86-2791

E. J. Underwood, C.B.E., Ph.D., B.Sc.Agr., F.A.A., F.A.I.A.S., *Director and Professor of Agriculture*

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H. P. Schapper, B.Com., Ph.D., *Reader in Agricultural Economics*: agricultural economic policy and farm management

R. G. Mauldon, M.Sc.Agr., Ph.D., *Senior Lecturer in Farm Management*: production economics and farm management

J. S. Nalson, M.Sc.Agr., Ph.D., *Senior Research Economist*: land development and rural labour

(b) AGRONOMY

A. J. Millington, D.Sc.Agr., *Reader in Agronomy*: pasture legume breeding and agronomy

W. J. R. Boyd, B.Sc.Agr., Ph.D., D.T.A., *Lecturer in Agronomy*: cereal genetics

C. M. Francis, B.Sc.Agr., Ph.D., *Research Fellow*: plant mutagenesis, oestrogenicity of pasture legumes

J. S. Gladstones, B.Sc.Agr., Ph.D., *Lecturer in Agronomy*: crop legume breeding and agronomy

N. R. McKeown, M.Sc.Agr., *Research Officer*: herbage evaluation studies

(c) ANIMAL PRODUCTION

E. J. Underwood, C.B.E., Ph.D., B.Sc.Agr., F.A.A., F.A.I.A.S., *Professor of Agriculture*: animal nutrition and physiology, trace elements

Mrs. R. Giles, B.Sc.Agr., Ph.D., *Senior Demonstrator*: mineral nutrition

R. J. Moir, B.Sc.Agr., *Reader in Animal Nutrition*: ruminant nutrition and microbiology, roughage utilization

M. Somers, B.Sc.Agr., Ph.D., *Lecturer in Animal Production*: mineral metabolism

(d) DEPARTMENT OF SOIL SCIENCE AND PLANT NUTRITION

J. P. Quirk, B.Sc.Agr., Ph.D., *Professor of Soil Science*: surface chemistry of inorganic soil colloids, transport processes

L. A. G. Aylmore, B.Sc., Ph.D., *Lecturer in Soil Science*: swelling of soil colloids, pore size distribution, flow through porous media

R. S. Beckwith, B.Sc., *Queen Elizabeth II Research Fellow in Agriculture*: availability of micronutrient metals

J. H. Chute, B.Sc., Ph.D., *Lecturer in Soil Science*: clay mineralogy, weathering, electron-microscopy

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D. G. Edwards, B.Sc.Agr., Ph.D., *Research Fellow in Biophysics*: biophysics of plant nutrient absorption
R. M. Greenwood, M.Sc., *Research Fellow in Soil Microbiology*: ecology of *Rhizobia*
U. Kafkafi, M.Sc., Ph.D., *Research Fellow in Soil Chemistry*: phosphate absorption on clays
J. F. Loneragan, B.Sc., Ph.D., *Senior Lecturer in Soil Science*: absorption, distribution and utilization of plant nutrients
C. A. Parker, B.Sc.Agr., Ph.D., *Reader in Soil Microbiology*: biological nitrogen fixation—biochemistry and ecology
A. M. Posner, B.Sc., Ph.D., *Reader in Soil Chemistry*: physical chemistry of inorganic soil colloids
B. K. G. Theng, B.Sc.Agr., Ph.D., *Research Fellow in Soil Chemistry*: fractionation and chemistry of soil organic matter

2. Botany Department

Nedlands. Tel.: Perth 86 2481

- B. J. Grieve, Ph.D. (Lond.), M.Sc. (Melb.), F.L.S., *Professor*: physiological ecology
Miss A. M. Baird, M.Sc. (W.A.), *Senior Lecturer*: ecology
N. H. Brittan, B.Sc., Ph.D. (Dunelm), *Senior Lecturer*: cytogenetics
D. W. Goodall, Ph.D., D.Sc., A.R.C.S., *Honorary Reader*: statistical ecology
R. N. Hilton, M.A. (Cantab.), *Lecturer*: mycology and plant pathology
S. H. James, M.Sc., Ph.D. (Syd.), *Lecturer*: cytogenetics
A. J. McComb, M.Sc. (Melb.), Ph.D. (Cantab.), *Lecturer*: plant physiology
G. I. Pearman, B.Sc.Hons. (W.A.), *Senior Demonstrator*: plant physiology
G. G. Smith, M.Sc. (W.A.), *Lecturer*: algal ecology

3. Zoology Department

Nedlands. Tel.: Perth 86 2481. Cables: Uniwest, Perth

- H. Waring, F.A.A., D.Sc. (Aberd.), *Professor and Head of Department*
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E. P. Hodgkin, B.Sc. (Manc.), D.Sc. (W.A.), *Reader*: littoral and shallow water marine fauna limnology
A. R. Main, Ph.D. (W.A.), *Reader*: speciation in Western Australian fauna
W. C. Packer, Ph.D. (Stanford), *Lecturer*: amphibian and marsupial ecology and behaviour
J. W. Shield, Ph.D. (W.A.), *Senior Lecturer*: physiology of pouch joey marsupials
K. T. Zwicky, Ph.D. (Zur.), *Senior Lecturer*: sensory physiology of invertebrates
G. L. Ward, B.V.Sc. (Syd.), *Senior Demonstrator*: fauna of macropod rumen

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G. M. Storr, B.Sc.Hons., Ph.D., *Curator of Vertebrates*
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P.O. Box 2298, Wellington. Tel.: 47-277

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Research Division

Headquarters, Hamilton, Ruakura Agricultural Research Centre, Private Bag.
Tel.: 65-189. Cables: Agfarm, Hamilton.

L. R. Wallace, M.Agr.Sc., Ph.D., *Director*: administration of research

I. J. Inkster, M.Agr.Sc., *Assistant to Director*: administration of research

J. D. J. Scott, B.Agr.Sc., *Liaison Officer*

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D. G. Edgar, B.Sc., Ph.D., MRCVS, *Assistant Director* (Animal Research)

Animal Nutrition

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A. M. Bryant, M.Agr.Sc.: physiology of digestion

G. C. Everitt, M.Sc., Ph.D.: beef cattle research

A. D. H. Joblin, B.Agr.Sc., Dip.Trop.Agr.: beef cattle research

J. P. Joyce, M.Agr.Sc., Ph.D.: sheep nutrition

R. H. Khouri, B.A., B.Sc., M.Sc., Ph.D.: calf rearing

R. J. Lancaster, M.Sc.: pasture conservation

J. C. Percival, B.Agr.Sc.: beef cattle studies

F. S. Pickering, B.Sc.: nutrition chemistry

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J. W. Ronaldson, M.Sc.: chemistry of toxic substances

E. P. White, M.Sc., D.Sc.: chemistry of plant alkaloids

J. E. Wolff, M.Agr.Sc.: ruminant metabolism

D. E. Wright, M.Sc., Ph.D.: ruminant metabolism

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P. H. Mortimer, B.V.Sc., M.A.: experimental pathology

J. A. Peters, Dip.Anal.Chem. (Arnhem), D.M.L.T. (Aus.), F.R.M.S.: biolipids

Animal Genetics

A. H. Carter, M.A., Ph.D.: animal genetics

J. N. Clarke, M.Agr.Sc.: animal genetics

A. R. Quartermain, M.Agr.Sc., Ph.D.: animal genetics

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L. R. Fell, M.Rur.Sc.: dairy hygiene

D. R. Lang, B.Agr.Sc., M.S., Ph.D.: reproduction physiology

R. A. S. Welch, B.Agr.Sc., B.Sc.: endocrinology

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Meat Production

- Miss E. K. Walker, M.Agr.Sc.: beef cattle studies
A. H. Kirton, M.Agr.Sc., Ph.D.: growth and carcass assessment

Agronomy

- A. G. Campbell, M.Agr.Sc.: factors affecting pasture growth

Biophysics

- D. S. M. Phillips, M.Sc.: milking techniques
G. de la M. Nichols, B.Sc.: electronic biometrics

Animal Diseases

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W. H. Bishop, M.R.C.V.S.: experimental surgery
G. C. Cairns, B.Sc.: parasitology
Miss M. E. Carter, B.Vet.Sc.: bacteriology
M. R. Coup, B.Sc.: toxicology
D. O. Cordes, B.V.Sc., M.S.: veterinary pathology
J. C. Gerring, B.V.Sc.: metabolic diseases
D. Martinovich, B.V.Sc., Dip.Agr.: veterinary pathology
P. J. O'Hara, B.V.Sc.: veterinary pathology
R. A. Robinson, B.V.Sc., Dip. Microbiol.: salmonellosis
W. A. Royal, B.V.Sc., Dip. Bact.: bacteriology
P. W. Young, B.Agr.Sc.: metabolic diseases

Soil Research

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P. M. Bonish, M.Sc.: biochemistry
P. Bramley, B.Sc.: chemical weed control
H. A. Browning, B.A.Hort.: field crops
Miss M. E. di Menna, M.Sc., Ph.D.: microbiology, yeasts
F. D. Dorofaeff, B.Sc.: plant nutrition
C. During, B.Agr.Sc.: soil fertility
D. E. Hogg, B.Sc.: soil chemistry, leaching losses
K. F. Hoy, B.Sc.: fertilizer chemistry
F. C. C. Hupkens van der Elst, Ing.Agr.: soil fertility, peat soils
J. Karlovsky, Ing.Agr.: fertilizer field trials
K. J. McNaught, M.Sc.: plant nutrition
K. R. Middleton, M.Sc., A.R.I.C.: plant nutrition
R. L. Nielson, B.Sc.: soil biology, earthworms
P. F. Noble, B.Sc.: soil physics, hydrology
J. N. Parle, M.Sc., Ph.D.: soil microbiology, legume nodulation
E. Pawson, B.Sc., Ph.D., F.R.I.C.: soil analysis, gas chromatography
W. F. Rolt, B.Sc.: soil chemistry, copper, molybdenum
R. E. Rose, M.Agr.Sc.: microbiology, sulphur organisms
W. M. H. Saunders, M.Sc., Ph.D.: soil chemistry, phosphates
G. Sherrell, B.Sc., M.S.A.: soil chemistry, phosphates
M. R. J. Toxopeus, M.Agr.Sc.: soil fertility

Field Research Section

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L. D. Bascand, B.Agr.Sc.: agrostology
R. A. French, B.Agr.Sc.: agric. entomology

D. A. Grant, B.Agr.Sc.: plant ecology
 W. M. Kain, B.Agr.Sc.: agric. entomology
 T. E. Ludecke, M.Agr.Sc.: soil fertility
 J. L. Matthews, B.Sc.: pesticides
 B. J. P. Molloy, M.Agr.Sc.: plant ecology
 Miss J. E. Radcliffe, B.Sc.: plant ecology

Conduct of field research in crops, pastures, soils, insect pests, weed control and animal production in districts adjacent to listed headquarters.

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 G. G. Cossens, B.Sc., Dip.A.O.S.M.: Field Research Officer, Alexandra
 K. Cottier, B.Agr.Sc.: Field Research Officer, Hamilton
 G. L. B. Cumberland, B.Agr.Sc.: Field Research Officer, Auckland
 J. A. Douglas, B.Agr.Sc.: Field Research Officer, Oamaru
 G. Goold, B.Agr.Sc.: Field Research Officer, Whangarei
 C. C. McLeod, B.Agr.Sc.: Field Research Officer, Timaru
 M. B. O'Connor, B.Agr.Sc.: Field Research Officer, Nelson
 R. C. Stephen, B.Agr.Sc.: Field Research Officer, Christchurch
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 M. N. Foggo, B.Agr.Sc.: pasture ecology
 G. K. Hight, M.Agr.Sc.: sheep and beef cattle production
 M. M. Wodzicka-Tomaszewska, M.Agr.Sc., Ph.D.: sheep physiology—adaptation to environment

TE KAUWHATA HORTICULTURAL RESEARCH STATION

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A. McKissock, M.Sc.: oenology, viticulture

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 E. D. Andrews, M.Sc.: biochemistry, nutritional diseases
 J. Bell, B.Sc.: noxious animal control
 Miss B. W. Boyes, B.Sc.: infectious infertility, brucellosis and vibriosis
 R. V. Brunsdon, M.Sc., Ph.D.: internal parasites
 P. G. Clinch, B.Sc.: apiculture
 Miss J. N. Collett, B.Sc.: insecticide metabolism
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 H. de Jong, Vet.Dip. (Utrecht), Dip.Microbiol.: microbiology, infectious diseases
 M. O. Ekdahl, B.A., B.Sc., C.O.P. Bact.: microbiology
 R. E. W. Elliott, B.V.Sc., Dip.Bact.: mastitis
 J. A. A. Gardner, M.Sc.: immuno-chemistry
 A. B. Grant, B.Sc., Ph.D.: biochemistry, selenium responsive diseases
 D. L. Harrison, B.Sc.: insecticide metabolism
 A. Heath, B.Sc.: external parasites
 W. E. Jonas, B.V.Sc., Dip.Microbiol., Ph.D.: immunology—salmonellosis
 M. A. S. Jones, B.V.Sc., Dip.Agr.: virology—pneumonia
 J. W. Lock, M.Sc.: biochemistry of parasites
 I. G. McIntosh, B.Sc.: toxicology, noxious animal control

NEW ZEALAND

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Mrs. E. S. Miller, B.Sc.: external parasites
K. R. Millar, M.Sc., Ph.D.: radiobiology, selenium metabolism
D. F. L. Money, B.V.Sc.: *Superintendent*, Wallaceville Diagnostic Station:
diagnostic pathology
T. Palmer-Jones, B.Sc., N.D.Ap. (N.Z.): apiculture, pollination requirements;
toxic honey
D. R. Ris, B.Sc.: microbiology, footrot, ovine brucellosis
G. Shirley, B.V.Sc.: diagnostic pathology
S. R. B. Solly, M.Sc.: insecticide metabolism
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J. C. Turner, B.Sc.: toxicology
L. K. Whitten, B.V.Sc., Ph.D.: parasitology; control of internal and external
parasites
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K. E. Jury, M.Sc., Dip.Math.Stat.: general biometrics
K. J. A. Revfeim, M.Sc.: general biometrics
Mrs. E. A. M. Viggers, B.A., R.S.S. Dip.Stat.: general biometrics

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H. R. G. Minard, B.Sc., A.R.C.Sc.: soils and plant nutrition
T. A. O'Brien, Ph.D.: vegetables
L. A. Porter, M.Agr.Sc.Hort.: berryfruits
A. B. Webster, B.Sc.Hort., N.D.H.: vegetables
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Horticultural Research Laboratory

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G. F. Laundon, B.Sc.: plant pathology (rust fungi)
D. C. M. Manson, B.Agr.Sc.: entomology (mites)
R. H. Powell, M.A.: botany
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K. G. Tate, B.Agr.Sc.: therapeutants
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D. S. Rickard, M.Sc.: soil chemistry and physics
J. E. Rudman, B.Sc.Agr.: animal nutrition

A. R. Taylor, B.Agr.Sc.: irrigation engineering
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K. R. Drew, M.Agr.Sc.: animal nutrition
K. H. C. Lewis, M.Agr.Sc.: animal husbandry
R. S. Scott, B.Agr.Sc.: soil fertility

Taieri Soil Research Station

J. L. Grigg, M.Sc., A.N.Z.I.C., *Officer-in-Charge*: soil chemistry

Taieri Diagnostic Station

Taieri Agricultural Centre, Private Bag, Mosgiel. Tel.: Mosgiel 7143.
Cables: Agriculture

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diagnostic pathology, mycology
R. A. F. Chevis, B.V.Sc.: parasitology
D. E. Gardner, B.V.Sc., Dip.Microbiol.: diagnostic pathology, microbiology
R. R. Russell, B.Sc.: diagnostic microbiology

Dairy Division

Wellington, P.O. Box 2298. Tel.: 47-277

N. E. Briggs, *Director*: organization generally
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Wallaceville, Wellington. Tel.: 7199, Upper Hutt

Chemistry and bacteriology of milk and dairy produce: also water supplies, etc.

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A. G. Frieberg, M.Sc., A.R.I.C.: *Acting Supervising Dairy Chemist*
N. Lodge, A.R.I.C.: *Chemist*

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Wellington, P.O. Box 2298. Tel.: 47-277

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M. E. Yates, M.Agr.Sc.: soil conservation, water run-off experiments

NEW ZEALAND

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M. J. Hill, M.Agr.Sc.: seed research

Mrs. M. E. H. Johnson, B.Agr.Sc.: seed research

Miss B. D. Matthews, B.Sc.: seed research

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Head Office, Wellington

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general administration of research; land utilization; agricultural economics

I. L. Baumgart, B.A., B.Sc., *Assistant Director-General* (Agriculture and Biology):
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Animal Ecology Division

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J. E. C. Flux, B.Sc. (Aberd.), Ph.D. (Aberd.): ecology and behaviour of lagomorphs

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Applied Mathematics Division

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A. C. Glenday, M.A. (N.Z.), B.Sc. (Lond.): applied statistics

H. S. Roberts, M.A. (N.Z.): applied statistics

G. A. Vignaux, Ph.D., D.I.C. (Lond.): operational research

Auckland Industrial Development Laboratories

P.O. Box 2225, Auckland. Tel.: 24-116

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H. E. Connor, M.Sc.: biosystematics and breeding systems grasses

A. P. Druce, B.E.: ecology

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Miss L. B. Moore, M.Sc., D.Sc.: taxonomy (including seaweeds); ecology grasslands

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Chemistry Division

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 P. J. Clark, M.Sc., F.N.Z.I.C., *Dominion Analyst*: pesticides

Crop Research Division

Private Bag, Christchurch. Tel.: 65-342 Christchurch and 45 Lincoln

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TOBACCO RESEARCH STATION

Riwaka, R.D.3, Motueka. Tel.: 501
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 D. S. C. Wright, M.Agr.Sc.: plant breeding

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 D. E. Yen, M.Agr.Sc., *Officer-in-Charge*
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 Miss J. M. Wheeler, M.Sc.

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P.O. Box 223, Nelson. Tel.: 81-082. Cables: Entlab
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 Miss E. Collyer, B.Sc., Ph.D.: integrated control of orchard pests, systematics
 and ecology of leaf inhabiting mites
 Miss P. Insley, B.Sc.Hort.: predators and parasites of fruit insects
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 E. G. White, M.Hort.Sc.: biological control of weeds, tussock grassland insects

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 V. A. L. Allan, B.Sc.Hort.: ecology of Hepialidae

INSECTICIDES SECTION

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NEW ZEALAND

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G. S. Grandison, B.Sc.: plant parasitic nematodes, Nematomorpha

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G. W. Ramsay, M.Sc., Ph.D.: Acarina
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J. S. Timlin, B.Sc., Ph.D., D.I.C.: ecology and larval systematics of Noctuidae

SUBSTATION, PALMERSTON NORTH

- c/o Grasslands Division, Private Bag, Palmerston North
D. H. Todd, *Officer-in-Charge*: pasture and crop insects

SUBSTATION, LINCOLN

- c/o Crop Research Division, Private Bag, Christchurch
J. M. Kelsey, B.Sc., *Officer-in-Charge*: pasture and crop insects
L. J. Dumbleton, B.Sc.For.: systematics of Hepialidae, simuliids
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Director
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R. P. Hansen, B.Sc. (N.Z.): fatty acids of butterfat
L. Hartman, D.Sc. (N.Z.), M.Sc. (N.Z.), B.Chem.E. (Lwow): mutton tallow
I. M. Morice, M.Sc., Ph.D. (Lond.): seed and plant fatty acids

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E. G. Bollard, B.Sc., Ph.D. (Cantab.): plant nutrition
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D. A. Heatherbell, B.Sc.: fruit processing
D. I. Jackson, M.Agr.Sc.: tree physiology
D. S. Letham, M.Sc., Ph.D. (Birm.): cell division stimulants
D.W. McKenzie, M.Sc., Ph.D. (Lond.): rootstock and variety investigations of pome fruits
C. A. S. Padfield: cold storage of fruit
G. Strachan, B.S.: fruit and vegetable processing
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 P. S. Evans, M.Sc.: anatomy and morphology of pasture plants
 W. Harris, B.Sc.: pasture ecology
 J. A. Lancashire, M.Agr.Sc.: pasture and animal ecology
 G. J. Struik, B.S., M.Sc., Ph.D.: weed ecology

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 D. Wilson, M.Agr.Sc.: pasture plant breeding and genetics

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SUBSTATION, LINCOLN

c/o Crop Research Division, Private Bag, Christchurch

- K. F. O'Connor, B.Agr.Sc., Ph.D., *Officer-in-Charge*: pasture ecology and tussock lands
 E. W. Vartha, M.Agr.Sc.: pasture ecology and tussock lands

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- A. J. Harris, M.Agr.Sc., *Officer-in-Charge*: pasture ecology
 K. R. Brown, B.Sc.: pasture ecology

SUBSTATION, TE AWA (Hill-country)

c/o Grasslands Division, Private Bag, Palmerston North

- F. E. T. Suckling, Dip.Dy. Farming, *Officer-in-Charge*: pasture ecology

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Gracefield, Lower Hutt. Tel.: 699-199. Cables: Physical

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 I. D. Cave, M.Sc.: X-ray crystallography; physical properties of wood
 M. A. Collins, M.Sc., A.Inst.P.: electron spin resonance in biology
 Miss J. M. de Lisle, B.Sc.: molecular biology
 D. M. Hall, M.Sc.: electron microscopy; plant surfaces; wax
 K. J. McCree, M.Sc., Ph.D. (Lond.), D.I.C.: photoconductivity of organic monolayers; light in relation to plant growth
 B. A. Meylan, M.Sc.: fine structure and physical properties of wood
 J. H. Troughton, M.Agr.Sc.: environmental physiology

NEW ZEALAND

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R. T. J. Clarke, M.Sc., Ph.D.: rumen microbiology
R. M. Greenwood, M.Sc.: clover rhizobia
J. W. Lyttleton, M.Sc., Ph.D.: protein and nucleic acid chemistry
E. M. Moustafa, M.Sc., Ph.D.: plant biochemistry
G. B. Petersen, M.Sc., M.A., D.Phil.: nucleic acids
P. J. Peterson, M.Sc., Ph.D.: mineral metabolism and plant biochemistry
C. S. W. Reid, M.Sc., Ph.D.: ruminant physiology
G. B. Russell, B.Sc.Hons., Ph.D.: organic chemistry
M. J. Ulyatt, M.Agr.Sc., Ph.D.: ruminant metabolism
K. I. Williamson, M.Sc.: biophysics
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LINCOLN SUBSTATION

c/o Crop Research Division, Private Bag, Christchurch

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J. D. Ferguson, B.Sc., Ph.D.: plant physiology

Plant Diseases Division

Private Bag, Auckland. Tel.: Auckland 81-199

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P. J. Brook, M.Sc., Ph.D.: plant pathology; fungous diseases of fruit trees and grape vines
Mrs. S. Davison, B.Sc.: fungous taxonomy; plant pathogens
Miss J. M. Dingley, M.Sc.: fungous taxonomy; Ascomycetes
D. W. Dye, B.Agr.Sc., Ph.D.: bacterial taxonomy; *Xanthomonas*; *Erwinia*; legume cultures
M. H. Dye, M.Sc., Ph.D.: vascular pathology; silver leaf of fruit trees
Mrs. R. F. Elliott, M.Sc.: fungous physiology; shoot apex culture
P. R. Fry, M.Sc., Ph.D.: virus diseases of plants
K. M. Harrow, M.Agr.Sc.: plant pathology; plant protection chemicals
B. T. Hawthorne, B.Agr.Sc.: plant pathology; potato and vegetable diseases
R. F. R. McNabb, M.Sc., Ph.D.: fungous taxonomy; basidiomycetes
S. A. Menzies, B.Agr.Sc.: plant pathology; disease identification
G. I. Robertson, M.Sc.: plant pathology; soil-borne diseases
D. A. Shackleton, M.Agr.Sc.: bacterial diseases of plants
D. Spiller, B.Sc., Ph.D.: entomology; insecticide resistance; control of chironomid midges
J. B. Taylor, B.Agr.Sc., Ph.D.: plant pathology; soil-borne diseases

FIELD CROP DISEASE SUBSTATION

c/o Crop Research Division, Private Bag, Christchurch

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R. C. Close, B.Agr.Sc., Ph.D.: plant pathology; virus diseases of field crops
R. F. Sanderson, M.Sc.: plant pathology; fungous diseases of field crops
Miss E. E. Walker, M.A.: plant pathology; diseases of tobacco and hops

PASTURE PLANT DISEASE SUBSTATION

c/o Grasslands Division, Private Bag, Palmerston North

G. C. M. Latch, M.Agr.Sc., Ph.D., *Officer-in-Charge*: fungous diseases of pasture plants

M. F. Clark, M.Sc., Ph.D.: virus diseases of pasture plants

Plant Physiology Division

Private Bag, Palmerston North. Tel.: 80-039

K. J. Mitchell, B.Agr.Sc., Ph.D., *Director*

M. P. Denne, B.Sc.Hons., Ph.D.: anatomy

B. J. Forde, M.Sc., Ph.D.: translocation and anatomy

D. Scott, M.Sc., Ph.D.: growth and climate

A. O. Taylor, B.Sc.Hons., Ph.D.: development regulatory systems

Soil Bureau

Private Bag, Lower Hutt. Tel.: 693-119

J. K. Dixon, M.Sc. (N.Z.), Ph.D. (Lond.), D.I.C., F.R.I.C., F.N.Z.I.C., F.R.S.N.Z., *Director*: soil chemistry

AGRICULTURAL SOIL PHYSICS

K. S. Birrell, M.Sc. (N.Z.), A.R.I.C., A.N.Z.I.C., *Senior Physicist*: physico-chemical properties of soil allophane (*in charge*)

E. Z. Arlidge, M.Sc. (N.Z.), Ph.D. (Aberd.): soil structure of cropped soils, Lincoln

M. W. Gradwell, B.Sc. (N.Z.): frost in soils, structure and aeration of pasture soils

R. J. Jackson, B.Sc. (Hull), Ph.D. (Dunelm): agricultural soil physics; hydrology of a catchment

PHYSICAL CHEMISTRY

M. Fieldes, D.Sc. (N.Z.), A.N.Z.I.C., *Senior Physical Chemist*: soil mechanisms, clay mineralogy, radioactivity (*in charge*)

G. G. C. Claridge, M.Sc., Ph.D. (N.Z.): clay mineralogy, crystal structure, Antarctic soils

R. J. Furkert, M.Sc. (N.Z.): surface chemistry, radioactive tracers

H. R. Penhale, M.Sc. (N.Z.), A.N.Z.I.C.: soil corrosion, cathodic protection

N. Wells, B.Sc. (Lond.), A.N.Z.I.C.: soil geochemistry, minor element availability

SOIL BIOCHEMISTRY

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J. K. Martin, M.Sc., Ph.D. (N.Z.), A.N.Z.I.C.: biochemistry of phosphorus compounds in soil

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M. S. Luxton, B.Sc., Ph.D. (Wales): ecology and systematics of soil mites

J. D. Stout, M.A., Ph.D. (N.Z.): bacteria and protozoa in soils

J. P. Widdowson, M.Agr.Sc. (N.Z.): pot experiments

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R. B. Miller, B.A., M.Sc. (N.Z.), Agr.Lic. (Sweden), A.N.Z.I.C.: forest soils

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Mrs. B. C. Edgar, B.Sc. (Soton.), Ph.D. (Dunelm), *Pedologist*, Wellington: micropedology
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N. R. Datta Biswas, M.Sc., Ph.D., *Soil Conservation Officer*: soil survey interpretation
S. Digar, M.Sc., Dip.Agr. (Cantab.), *Soil Correlator*: soil survey and correlation
S. P. Gawande, B.Sc.Agr., AIARI, Ph.D., *Assistant Soil Survey Officer*: genesis, classification of Indian soils and soil survey
S. P. Gupta, B.Sc., AIARI, *Assistant Soil Survey Officer*: soil survey
L. R. Hirekarur, M.Sc., Ph.D., *Assistant Soil Survey Officer*: soil survey
S. P. Jain, M.Sc., *Assistant Soil Survey Officer*: soil survey
R. L. Karale, B.Sc.Agr., AIARI, Ph.D., *Assistant Soil Survey Officer*: soil survey, soil genesis and soil classification
R. J. Landey, B.Sc.Agr., AIARI, *Assistant Soil Survey Officer*: soil survey
L. M. Mathur, M.Sc., *Cartographer*: soil map editing
S. Mouttapa, B.Sc., M.Sc., Ph.D. (Toulouse), *Soil Conservation Officer*: aerial photo interpretation
R. S. Murthy, M.Sc.Agr., *Soil Correlator*: soil survey and correlation
N. K. Shende, B.Sc.Agr., AIARI, *Assistant Soil Survey Officer*: soil fertility and soil survey
T. R. Srinivasan, B.Sc., AIARI, *Assistant Soil Survey Officer*: soil fertility and soil survey

DIVISION OF BOTANY

- M. S. Swaminathan, B.Sc., B.Sc.Agr., AIARI, Ph.D. (Cantab.), F.N.I., *Head of Division*: radiation genetics and cytogenetics of crop plants (Tel.: 51481)
R. D. Asana, M.Sc., Ph.D. (Lond.), D.I.C. (Lond.), *Professor of Botany*: plant physiology, drought resistance and nutrition (Tel.: 566078)
R. K. Aggarwal, M.Sc., AIARI, *Assistant Wheat Breeder*: wheat breeding
M. M. Ahluwalia, B.Sc., AIARI, *Assistant Geneticist*: breeding of millets
A. Austin, M.Sc.Agr., M.Sc. (Lond.), D.Sc. (Utrecht), *Cereal Physiologist*: nutritive quality of cereals
P. N. Bahl, M.Sc., *Assistant Wheat Breeder*: wheat breeding
J. S. Bakshi, M.Sc., Ph.D., *Assistant Geneticist*: millet breeding
S. K. Banerjee, B.Sc., M.Sc., Ph.D., *Seed Testing Officer*: X-ray analysis of seeds
S. N. Bhardwaj, M.Sc., Ph.D., *Assistant Professor of Botany*: plant physiology and nutrition
W. T. Butany, B.Sc.Agr., AIARI, M.S. (Texas), *Geneticist*: cotton breeding and minor millets breeding
V. L. Chopra, B.Sc., AIARI, *Assistant Geneticist*: radiation genetics
N. L. Dhawan, M.Sc., AIARI, Ph.D. (Minn.), *Geneticist*: maize breeding coordination
R. D. Iyer, B.Sc., M.Sc., *Assistant Cytogeneticist*: embryo culture of interspecific hybrids
H. K. Jain, B.Sc., AIARI, Ph.D. (Wales), *Cytologist*: cytology and cytochemistry
K. B. L. Jain, B.Sc.Agr., AIARI, *Assistant Wheat Breeder*: wheat and barley breeding
S. Jana, M.Sc., Ph.D. (Calif.), *Maize Breeder*: maize breeding
P. P. Jauhar, M.Sc., Ph.D., *Assistant Cytogeneticist*: cytogenetical effects of radioactive isotopes
L. M. Jeswani, B.Sc.Agr., AIARI, *Linseed Breeder*: pulse and linseed breeding
B. C. Joshi, M.Sc., *Cytogeneticist*: mammalian cytogenetics
B. S. Joshi, B.Sc.Agr., AIARI, Ph.D., *Geneticist*: bajra breeding
M. G. Joshi, B.Sc.Agr., AIARI, *Assistant Botanist*: distant hybridization
S. P. Kohli, M.Sc., Ph.D. (Corn.), *Wheat Breeder*: wheat breeding and co-ordination

- B. M. Lal, M.Sc., Ph.D., *Biochemist*: biochemistry
 V. S. Mathur, M.Sc., *Geneticist*: wheat and barley breeding
 R. K. Mehta, B.Sc., AIARI, Ph.D., *Assistant Professor of Botany*: fodder breeding
 D. P. Mishra, M.Sc., AIARI, *Mycologist (Wheat)*
 B. R. Murty, B.Sc.Agr., AIARI, Ph.D. (Corn.), *Geneticist*: biometrical genetics of crop plants
 K. S. Murty, B.Sc.Agr., M.Sc.Agr., *Assistant Plant Physiologist*: plant physiology and nutrition of citrus
 P. N. N. Nambisan, M.Sc., *Assistant Wheat Breeder*: wheat breeding
 M. D. Nandkeolyar, M.Sc.Agr., *Farm Manager*: wheat genetics and farm management
 A. Narain, M.Sc.Agr., Ph.D., *Head of the Centre of Project for Intensification of Regional Research on Cotton*: cytogenetics of castor
 P. N. Narula, M.Sc., *Assistant Wheat Breeder*: wheat breeding
 A. T. Natarajan, M.Sc., AIARI, Ph.D., *Cytogeneticist*: radiation genetics
 R. A. Pai, M.Sc., *Assistant Geneticist*: mammalian genetics
 V. Parkash, M.Sc., *Assistant Physiologist*: plant physiology
 S. S. Rajan, M.Sc., *Geneticist*: genetics of oilseed crops
 R. S. Rana, B.Sc.Agr., AIARI, Ph.D., *Cytogeneticist*: cytogenetics of floricultural plants
 M. V. Rao, M.Sc., *Assistant Professor of Botany*: wheat breeding
 N. G. P. Rao, B.Sc.Agr., AIARI, *Sorghum Botanist*: sorghum breeding
 S. S. Rohewal, M.Sc.Agr., *Assistant Geneticist*: pulse breeding
 N. N. Roy, B.Sc.Agr., AIARI, Ph.D. (Corn.), *Wheat Breeder*: wheat breeding
 M. N. Sarin, M.Sc., Ph.D., *Plant Physiologist*: plant physiology
 R. N. Sawhney, M.Sc., *Assistant Wheat Breeder*: wheat breeding
 K. L. Sethi, B.Sc., M.A., AIARI, *Assistant Botanist*: breeding of essential oil crops
 Kripa Shankar, B.Sc., M.Sc., *Geneticist*: fodder grass breeding
 K. C. Sikka, B.Sc., AIARI, *Assistant Biochemist*: biochemistry
 Amir Singh, M.Sc.Agr., M.S. (Kan.), *Seed Testing Officer*: seed testing
 Bhag Singh, M.Sc.Agr., *Assistant Plant Physiologist*: maize breeding
 Daljit Singh, B.Sc., AIARI, *Assistant Statistician*: statistics
 Joginder Singh, B.Sc.Agr., AIARI, *Senior Maize Breeder*: maize breeding
 M. P. Singh, M.Sc., *Assistant Cytologist*: cytology and cytochemistry
 S. P. Singh, B.Sc.Agr., AIARI, *Plant Physiologist*: plant physiology
 G. S. Sirohi, M.Sc., Ph.D., *Plant Physiologist*: plant physiology
 P. L. N. Somayajulu, B.Sc.Agr., AIARI, *Assistant Geneticist*: biometrical genetics
 D. Srinivasachar, B.Sc., M.Sc., AIARI, Ph.D. (Wis.), *Geneticist*: immunogenetics
 V. K. Srinivasan, M.Sc., Ph.D., *Geneticist*: genetics of wheat
 Y. M. Upadhaya, B.Sc., AIARI, Ph.D. (Syd.), *Assistant Wheat Breeder*: wheat breeding
 S. M. Vaidya, B.Sc., AIARI, *Assistant Geneticist*: sorghum breeding
 P. N. Wattal, M.Sc., *Assistant Plant Physiologist*: plant physiology

DIVISION OF ENTOMOLOGY

- S. Pradhan, M.Sc., Ph.D. (Lond.), D.Sc., F.R.E.S., F.E.S.I., *Head of Division*: functional morphology, ecology and toxicology (Tel.: 51482)
 N. C. Pant, M.Sc.Agr., Ph.D. (Lond.), D.I.C., F.E.S.I., *Professor of Entomology*: physiology, symbiosis and bee keeping, insect plant relationship
 Y. P. Beri, M.Sc.Agr., F.E.S.I., *Ornithologist*: determination of insecticidal residues at harvest and work on control of birds

INDIA

- M. W. Bhamburkar, M.Sc., *Assistant Entomologist*: locust toxicology and radioisotopes
- S. K. Bhatia, M.Sc., AIARI, Ph.D., F.E.S.I., *Assistant Ecologist*: ecology and control of fruit flies
- R. K. Bhardwaj, M.Sc., Ph.D., *Assistant Professor of Entomology*: insect morphology
- N. S. Bhattacharjee, B.Sc.Agr., AIARI., *Assistant Entomologist*: insect taxonomy
- S. M. Chatterji, M.Sc., AIARI, Ph.D., F.R.E.S., F.E.S.I., *Entomologist*: radioisotopes and sorghum pests
- Mrs. Kamlesh Dang, M.Sc., *Assistant Entomologist*: insect nutrition
- Miss U. U. Deshmukh, M.Sc., *Curator*: taxonomy of leaf hoppers
- S. I. Farooqi, M.Sc., *Assistant Systematic Entomologist*: taxonomy of parasites
- Miss Swaraj Ghai, M.Sc., Ph.D., *Assistant Entomologist*: taxonomy of mites
- A. Hakk, M.Sc., AIARI, Ph.D., *Assistant Systematic Entomologist*: taxonomy of plant bugs
- M. G. Jotwani, B.Sc., AIARI, Ph.D., F.E.S.I., *Millet Entomologist*: toxicology and sorghum entomology
- E. Khan, M.Sc., Ph.D., *Assistant Nematologist*: taxonomy of plant parasitic nematodes
- G. G. Kundu, B.Sc.Agr., AIARI, Ph.D., F.E.S.I., *Assistant Entomologist*: parasites, aphid-plant relationship
- Rattan Lal, M.Sc., AIARI, Ph.D., F.R.E.S., F.E.S.I., *Toxicologist*: toxicology and radioisotopes
- S. B. Mathur, M.Sc., *Assistant Parasitologist*: insect pathology
- K. N. Mehrotra, M.Sc., Ph.D. (W.Ont.), *Insect Physiologist*: insect physiology, biochemistry and toxicology
- Mrs. Santosh Mehta, *Assistant Entomologist*: insect nutrition and microbiology
- M. G. Ramdas Menon, B.Sc., Ph.D., F.R.E.S., F.E.S.I., *Systematic Entomologist*: taxonomy of insects
- P. B. Mukherjee, B.Sc., AIARI, F.E.S.I., *Entomologist*: storage entomology
- J. C. Pant, M.Sc., *Assistant Physiologist*: physiology and insect nutrition
- B. Parshad, M.Sc., AIARI, F.E.S.I., *Assistant Parasitologist*: taxonomy of insect parasites
- K. M. Peshwani, B.Sc.Agr., AIARI, *Assistant Economic Entomologist*: ecology of termites and grasshoppers
- K. G. Phadke, M.Sc., F.E.S.I., *Assistant Entomologist*: bee keeping
- K. Prasad, B.Sc., AIARI, Ph.D. (Minn.), F.E.S.I., *Nematologist*: ecology of nematodes and insects
- B. K. Rai, B.Sc.Agr., AIARI, *Assistant Toxicologist*: insect and mite toxicology and ecology
- N. Ramakrishnan, M.Sc., Ph.D., *Entomologist*: insect pathology
- P. V. Ranga Rao, B.Sc.Agr., AIARI, Ph.D., *Assistant Professor of Entomology*: electrophysiology
- H. S. Sangwan, B.Sc.Agr., AIARI, *Assistant Entomologist*: insect parasitology
- P. N. Saxena, M.Sc., *Assistant Toxicologist*: radioisotopes and locust toxicology
- G. R. Sethi, M.Sc., *Entomologist*: radioisotopes
- A. K. Sharma, M.Sc., AIARI, F.E.S.I., *Junior Parasitologist*: biology and taxonomy of insect parasites
- G. C. Sharma, B.Sc.Agr., AIARI, *Assistant Entomologist*: maize entomology and storage
- S. R. Singh, B.Sc.Agr., M.S., Ph.D. (Kan.), *Insect Geneticist*: insect genetics and plant resistance to insects
- P. D. Srivastava, M.Sc., D.Phil., F.E.S.I., *Assistant Professor of Entomology*: insect physiology and toxicology, and the biological control of snails
- B. R. Subba Rao, B.Sc., AIARI, Ph.D., F.A.Sc., *Parasitologist*: taxonomy of chalcidoid parasites; survey and biological control of insect pests

Prakash Swarup, M.Sc., AIARI, F.E.S.I., *Assistant Entomologist*: toxicology
 Mrs. Sashi Verma, M.Sc., *Assistant Entomologist*: toxicology of insects and mites
 S. R. Wadhi, M.Sc., AIARI, F.E.S.I., *Assistant Entomologist*: fumigants and plant quarantine

DIVISION OF HORTICULTURE

S. K. Mukherjee, M.Sc., D.Sc., *Head of Division*: pomology (Tel.: 53628)
 R. N. Singh, M.Sc.Agr., Ph.D., *Professor of Horticulture*: pomology
 S. S. Chatterjee, M.Sc., D.Phil., *Assistant Vegetable Breeder*: vegetables
 B. Choudhary, B.Sc.Agr., Ph.D. (Melb.), *Vegetable Breeder*: vegetables
 H. S. Gill, M.Sc.Agr., *Assistant Vegetable Specialist*: vegetables
 U. S. Kaicker, M.Sc., *Assistant Horticulturist*: pomology
 R. S. Malik, M.Sc.Agr., *Assistant Horticulturist*: floriculture
 P. K. Majumdar, B.Sc.Agr., AIARI, *Assistant Geneticist*: pomology
 N. Nath, M.Sc., AIARI, *Assistant Horticulturist*: pomology
 S. S. Randhawa, M.Sc., Ph.D., *Horticulturist*: pomology
 V. S. Seshadri, B.Sc.Agr., M.Sc.Agr., *Assistant Horticulturist*: fruit and vegetables
 J. N. Seth, M.Sc., Ph.D., *Assistant Horticulturist*: vegetables and pomology
 J. N. Sharma, B.Sc.Agr., AIARI, *Assistant Horticulturist*: floriculture
 Jagpal Singh, M.Sc.Agr., Ph.D. (Mich.), *Vegetable Specialist*: vegetables
 Ranjit Singh, M.Sc.Agr., AIARI, *Assistant Professor of Horticulture*: pomology
 Vishnu Swarup, M.Sc., M.S., AIARI, Ph.D., *Geneticist (Floriculture)*: floriculture
 R. N. Tiwari, M.Sc.Agr., *Assistant Vegetable Specialist*: vegetables

DIVISION OF MICROBIOLOGY

W. V. B. Sundara Rao, M.Sc., AIARI, Ph.D., *Head of Division*: rhizosphere microflora and bacterial inoculants (Tel.: 57649)
 A. Sen, M.Sc., AIARI, Ph.D., *Professor of Microbiology*: symbiotic and asymbiotic nitrogen fixation; phyllosphere microflora
 A. C. Gaur, M.Sc., D.Sc., *Soil Microbiologist*: microbial decomposition of soil organic matter and influence of humus on crop growth
 V. Iswaran, M.Sc., Ph.D., *Assistant Microbiologist*: Azotobacter
 N. B. Paul, B.Sc., AIARI, *Assistant Soil Microbiologist*: phosphorus solubilising organisms
 N. S. Subba Rao, M.Sc., Ph.D., *Microbiologist (Bact.Phys.)*: plant-microbe inter-relationship; legume root nodule
 R. B. Rewari, B.Sc., AIARI, *Assistant Soil Microbiologist*: rhizobium
 A. N. Sen, M.Sc., Ph.D., *Assistant Professor of Microbiology*: rhizobium and root exudates of leguminous plants
 A. K. Varma, M.Sc., Ph.D., *Assistant Botanist*: physiology of algae
 G. S. Venkataraman, M.Sc., Ph.D., *Microbiologist (Algae)*: physiology of blue green algae

DIVISION OF MYCOLOGY AND PLANT PATHOLOGY

S. P. Raychaudhuri, M.Sc., AIARI, D.Phil., F.P.S.I., F.L.S., F.N.I., *Head of Division*: plant pathology, virology (Tel.: 51474)
 G. P. Anand, M.Sc., *Assistant Virus Pathologist*: virology, serology
 A. Basu, M.Sc., *Virus Entomologist*: virology, insect transmission
 S. K. Batra, M.Sc., Ph.D., *Assistant Plant Pathologist*: plant pathology
 S. P. Capoor, M.Sc., Ph.D. (Lond.), F.P.S.I., *Virus Pathologist*: virology
 M. S. Chatrath, M.Sc., Ph.D., *Plant Pathologist*: plant pathology
 S. N. Chatterjee, M.Sc., AIARI, F.E.S.I., *Virus Entomologist*: virology, insect transmission
 V. V. Chenulu, B.Sc.Agr., AIARI, Ph.D. (Ill.), *Virus Pathologist*: virology, plant pathology

INDIA

- K. S. Dhanraj, B.Sc.Agr., AIARI, *Assistant Virus Pathologist*: plant pathology, cereal rusts
 K. L. Dhingra, M.Sc., *Assistant Virus Pathologist*: virology
 B. Ganguly, M.Sc., Ph.D., *Virus Pathologist*: virology, plant pathology
 J. S. Grewal, M.Sc., Ph.D., *Pathologist*: plant pathology, fungicides
 L. M. Joshi, M.Sc., Ph.D., *Plant Pathologist*: cereal diseases
 P. C. Joshi, M.Sc.Agr., *Assistant Mycologist*: plant pathology, cereal rusts
 J. N. Kapoor, M.Sc., AIARI, Ph.D., *Herbarium Keeper*: mycology
 A. K. Lambat, M.Sc.Agr., Ph.D., *Assistant Plant Pathologist*: plant pathology
 V. C. Lele, M.Sc., *Plant Pathologist*: plant pathology, cereal rusts, fruit diseases
 M. D. Mishra, M.Sc., AIARI, *Assistant Virus Pathologist*: virology and plant pathology
 R. L. Munjal, M.Sc.Agr., *Systematic Mycologist*: mycology
 T. K. Nariani, B.Sc., AIARI, *Virus Pathologist*: plant pathology, virology
 M. M. Payak, M.Sc.Agr., Ph.D., *Plant Pathologist*: mycology; cereal diseases
 A. S. Prabhu, M.Sc., AIARI, Ph.D., *Assistant Plant Pathologist*: cereals and essential oil-yielding crops
 R. Prasada, M.Sc., D.Sc., *Mycologist*: plant pathology, cereal rusts
 D. G. Rao, B.Sc., AIARI, *Assistant Virus Pathologist*: virology
 Y. P. Rao, B.Sc., AIARI, *Assistant Plant Bacteriologist*: plant bacteriology
 M. K. Roy, M.Sc., Ph.D., *Assistant Mycologist*: plant pathology, cereal rusts
 H. S. Sahambi, M.Sc., *Assistant Professor of Plant Pathology*: virology
 M. L. Sahni, M.Sc., AIARI, Ph.D., *Assistant Plant Pathologist*: plant pathology, cereal rusts, fungicides
 Mrs. Bineeta Sen, M.Sc., *Assistant Plant Pathologist*: plant pathology
 M. L. Seth, M.Sc., *Plant Pathologist*: virology
 C. L. Sethi, M.Sc., Ph.D., *Assistant Plant Pathologist*: plant pathology, nematology
 Mrs. R. Sharma, M.Sc., *Assistant Plant Pathologist*: sugarcane and millet diseases
 Sheodhan Singh, M.Sc., Ph.D. (Minn.), *Assistant Mycologist*: cereal diseases
 D. N. Srivastava, B.Sc.Agr., AIARI, M.S. (Wis.), Ph.D. (Wis.), *Plant Bacteriologist*: plant bacteriology
 Gopal Swarup, M.Sc.Agr., AIARI, M.S., Ph.D. (Kan.), *Plant Pathologist*: plant pathology, nematology
 K. S. Vashisth, M.Sc., *Assistant Virus Pathologist*: virology
 Dharam Vir, M.Sc., *Assistant Plant Pathologist*: plant pathology

DIVISION OF PLANT INTRODUCTION

- Harbhajan Singh, M.Sc., AIARI, *Head of Division*: plant taxonomy, plant breeding (vegetables), economic botany, genetics (Tel.: 57950)
 S. A. Dadlani, B.Sc.Agr., AIARI, *Assistant Botanist*: genetics and plant breeding
 Y. P. Gupta, B.Sc., AIARI, *Chemist*: phytochemistry
 M. W. Hardas, AIARI, *Plant Introduction Officer*: cytogenetics and plant breeding, economic botany
 P. P. Khanna, B.Sc., M.Sc., *Botanist*: plant taxonomy, plant breeding and economic botany
 M. A. Kidwai, M.Sc., *Assistant Chemist*: phytochemistry
 S. P. Mittal, M.Sc., AIARI, *Botanist*: plant breeding (vegetables), genetics, economic botany
 D. Satpathy, B.Sc., AIARI, *Assistant Botanist*: cytogenetics and plant breeding, economic botany
 K. Srinivasan, B.Sc.Agr., M.Sc., *Assistant Botanist*: plant breeding and genetics, economic botany
 T. A. Thomas, M.Sc., *Botanist*: plant breeding (vegetables), genetics and economic botany

DIVISION OF SOIL SCIENCE AND AGRICULTURAL CHEMISTRY

- N. P. Datta, M.Sc., D.Sc., A.R.I.C., *Head of Division*: physical chemistry, colloids, soil fertility and fertilizer use, trace elements (soil chemistry), use of radioisotopes in agricultural research, soil testing (Tel.: 51494)
- K. C. Gulati, M.Sc., Ph.D., *Professor of Agricultural Chemistry*: organic chemistry and agricultural chemistry
- T. D. Biswas, M.Sc., D.Phil., *Soil Scientist*: soil survey, geology and geomorphology, soil science, micronutrient elements and soil conservation
- R. K. Chatterjee, B.Sc., M.Sc., Ph.D., *Assistant Professor of Agricultural Chemistry*: physical chemistry, soil colloids and clay minerals, soil physics
- B. Das, M.Sc., *Assistant Soil Survey Officer*: micronutrients
- D. K. Das, B.Sc.Agr., M.Sc., Ph.D., *Assistant Soil Physicist*: soil science, clay mineralogy of soils, fertilizer reaction products in soil, soil physics
- N. B. Das, M.Sc., Ph.D., *Biochemist*: biochemistry and nutrition
- R. S. Dewan, AIARI, Ph.D., *Assistant Chemist*: organic chemistry and agricultural chemistry
- A. B. Ghosh, M.Sc., *Assistant Soil Chemist*
- A. S. Gowaikar, B.Sc., M.Sc., *Assistant Soil Survey Officer*: soil science and soil survey
- R. P. Gupta, B.Sc.Agr., M.Sc., Ph.D., *Soil Physicist*: soil physics
- M. A. Idnani, B.Sc., AIARI, *Agricultural Chemist*: manures and fertilizers
- H. K. Jain, M.Sc., Ph.D., *Assistant Organic Chemist*
- A. R. S. Kartha, M.Sc., Ph.D., *Supernumerary Chemist*: organic chemistry
- M. S. Khera, B.Sc.Agr., AIARI, Ph.D., *Assistant Soil Chemist*
- M. S. Naik, M.Sc., Ph.D., *Assistant Biochemist*
- N. M. Nimgade, B.Sc.Agr., AIARI, Ph.D. (Wis.), *Soil Physicist*
- P. K. Oomman, M.Sc., Ph.D., *Assistant Soil Chemist*: soil fertility studies, soil testing and radio tracer work
- B. Ramamoorthy, M.Sc., D.Phil., *Special Officer (Soils)*
- A. E. Vasudeva Rao, B.Sc., M.Sc., F.G.M.S., *Assistant Professor of Geology*
- A. K. Rishi, B.Sc., AIARI, *Assistant Agricultural Chemist*: agricultural chemistry and soil fertility
- M. B. Sen Gupta, B.Sc., M.Sc., Ph.D. (Lond.), D.I.C., *Assistant Physical Chemist*
- K. B. Shome, M.Sc., *Assistant Soil Chemist*: use of radioisotopes in soil fertility and fertilizer use
- G. C. Shukla, M.Sc., D.Phil., *Assistant Professor of Analytical Chemistry*: soil science, inorganic chemistry, analytical chemistry
- B. V. Subbiah, M.Sc., Ph.D., *Soil Scientist*: soil science including soil chemistry, soil fertility, fertilizer use and plant nutrition

National Dairy Research Institute, Karnal

Tel.: 29. Cables: Dairysearch

- Noshir N. Dastur, M.Sc., Ph.D., A.I.I.Sc., *Director of Dairy Research*
- A. T. Dudani, B.Sc., Ph.D., *Head of Dairy Bacteriology*
- I. J. Babbar, M.Sc., Ph.D., *Chief Biochemist*
- R. A. Srinivasan, M.Sc., *Bacteriologist*
- V. K. N. Nambudripad, M.Sc., Ph.D., *Research Officer*
- S. R. Jayashankar, M.Sc., *Assistant Research Officer (Bacteriology)*
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DAIRY CHEMISTRY

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INDIA

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A. S. Narang, M.Sc., *Assistant Research Officer*
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A. K. Banerjee, B.Sc.Agr.Eng., *Research Officer (Engineering)*
S. D. Thakur, M.E., *Associate Professor of Refg. Eng.*
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Satish Verma, M.S., I.D.D., *Research Officer (Extension)*
S. C. Das, B.A., Q.D.D., *Assistant Research Officer (Field Extn.)*
K. C. Tyagi, M.Sc.Agr., *Assistant Research Officer (Field Extn.)*

DAIRY HUSBANDRY

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G. D. Singh, B.Sc.Agr., M.S., *Research Officer*
Y. C. Gupta, B.Sc.Agr., AIARI, *Assistant Research Officer (Agri.)*
V. D. Mudgal, M.Sc., Ph.D., *Assistant Research Officer (Physics)*
Iqbal Nath Manchanda, L.V.P., M.S., *Assistant Research Officer*
S. J. Daniel, B.Sc., AIARI, *Assistant Research Officer*

DAIRY TECHNOLOGY

M. R. Srinivasan, M.A., A.I.I.Sc., *Head*
S. D. Burde, B.Sc., I.D.D., *Assistant Research Officer*

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T. R. Puri, M.A., *Statistical Officer*

DAIRY SCIENCE COLLEGE

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B. Ranganathan, M.Sc., Ph.D., *Associate Professor (Microbiology)*
K. M. Narayanan, M.Sc., Ph.D., *Associate Professor*
M. K. Jain, M.Sc., Ph.D., *Associate Professor*
C. A. Mulay, M.Sc., Ph.D., *Associate Professor (D.T.)*
Sukumar De, M.Sc., I.D.D., *Associate Professor (D.T.)*
N. K. Roy, M.Sc., Ph.D., *Associate Professor*
Y. M. Sood, N.E., I.E.Elect.Eng., *Assistant Professor*
S. L. Tuli, B.E.Dairy Eng., *Assistant Professor*
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AGRICULTURAL ECONOMICS AND STATISTICS, FARM MANAGEMENT RESEARCH IN PAKISTAN

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Amanullah, B.Sc., *Carcinologist*: carcinology

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Inayatullah Khan, M.Sc., *Marine Production Officer*: exploration, oyster culture

Lutfullah Khatri, B.Sc., *Quality Control Officer*: standardization of fish products

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Mohammad Ahsanullah, M.Sc., *Assistant Biologist*: shell and sardine

Mohammad Arshad, B.Sc., *Assistant Planktologist*: planktons

Mohammad Harun-ur-Rashid, B.Sc., *Assistant Biologist*: biology and life history of mackerel

Mohammad Khaleeluddin, B.Sc., *Aquarist*: taxonomy of fishes

Salahuddin Hashmi, M.Sc., *Assistant Biologist*: carcinology

Shafiqur Rehman, B.Sc., *Hydrologist*: hydrology

Shamsuddin Qureshi, M.Sc., *Assistant Biologist*: shrimp

Shamsul Haq Chowdhury, M.Sc., Dip. Fish Tech., *Fisheries Technologist*: fish technology

Shamsul Islam, B.Sc., Dip. Fish., *Assistant Biologist*: shrimp

Sheikh Abdul Aziz, B.Sc., *Biochemist*: biochemistry

Sheikh Abdul Jaleel, B.Sc., *Deputy Director*: marketing research, socio-economic statistics

Syed Ahmad Kabir, M.Sc., *Marketing Officer*: fishery statistics

Syed Mohammad Abdul Salam Kazmi, B.Sc., *Survey and Statistics Officer*: fishery statistics

Syed Mohiuddin, M.Sc., *Oceanographer*: oceanography

Syed Munirul Islam, M.Sc., M.S. (U.S.A.), *Deputy Director*: marine biology

Syed Shabihul Hasan Zaidi, B.Sc.Hons., M.Sc., *Assistant Biologist*: biology and life history of tuna

Tahir Ahmad Hashmi, M.Sc., *Assistant Biologist*: shrimp

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PAKISTAN

Pakistan Central Cotton Committee

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Soil Survey Project of Pakistan

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Fish Harbour, West Wharf, Karachi. Tel.: 233944. Cables: Zoology

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B. MINISTRY OF COMMERCE

Pakistan Tea Research Station

Srimangal, Dist. Sylhet, East Pakistan. Tel.: 25. Cables: Tresearch

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East Regional Laboratories

Dhanmandi, Dacca. Tel.: 5876. Cables: Epsearch

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Fazl-i-Rab, M.Sc., Ph.D., Dip. Food Tech., *Senior Research Officer*: analysis of peanut

North Regional Laboratories, Peshawar

BOTANY SECTION

S. M. A. Kazmi, *Senior Research Officer*: survey of medicinal plants

N. A. Malik, M.Sc., *Research Officer*: survey of medicinal plants

FOOD TECHNOLOGY RESEARCH DIVISION

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Mohd. Tarin, M.Sc., *Research Chemist*: fermentation by-products

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M. M. Hashmi, Ph.D. (Lond.), M.R.I.C., D.I.C., *Principal Scientific Officer*: food technology

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E. PLANNING COMMISSION

Agriculture and Food Section

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Aslam Ghayur, M.Sc.Agr. (Pb.), *Assistant Chief (Agriculture and Food Section)*: agricultural economics and agricultural planning, horticulture

Faizur Rahman, B.Sc.Agr. (Pb.), M.Sc.Agr. (Pb.), *Research Officer*: development of agriculture by improved methods

Gulnawaz Khan Wariach, M.A. (Pb.), *Research Officer*: economic research on planning of forest development

Mahboob Ali H. Khoja, B.A. (Bom.), M.S. (Wis.), *Deputy Chief*: land reforms, rural cooperative movement

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PAKISTAN

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Saeed Ahmad, M.Sc.Agr. (Pb.), *Research Officer*: nature of culturable wastes and their utilization
Saeed Ahmad, M.Sc.Agr. (Pb.), *Economic Investigator*: supply, consumption and marketing of milk
S. Naghat Hussain, M.Sc.Agr. (Pb.), *Assistant Chief*: economics of crop production
Miss Zinat Syed, M.A., LL.B. (Kar.), *Assistant Chief*: community development

UNIVERSITIES

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A. M. Shamsuddin, M.Agr. (Dac.), *Senior Lecturer*
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AGRICULTURAL ECONOMICS

- M. S. Islam, M.A. (Dac.), B.A. (Manc.), Ph.D. (Lond.), *Dean and Head of the Department*: farm management
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 M. A. Malek, M.Sc. (Dac.), *Lecturer*: nutrition chemistry

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FISHERIES

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 M. A. Haque, M.Agr. (Dac.), *Lecturer*: propagation of fruit plants

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 S. A. Wahid, G.V.Sc., *Senior Lecturer*: vety. surgery
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PAKISTAN

PHYSIOLOGY AND PHARMACOLOGY

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S. U. Ahmad, B.Sc.Vet. (Dac.), M.S., Ph.D. (Tex.), *Senior Lecturer*: breeding in connection with hormone
M. A. I. Khan, B.Sc.Vet. (Dac.), M.S. (Mich.), *Senior Lecturer*: physiology of farm animals
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POULTRY SCIENCE

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M. Idris, M.Sc. (Dac.), M.S. (Tex.), *Senior Lecturer*: soil fertility
S. Anwarul Haque, M.Sc. (Mym. EPAU), *Lecturer*: soil survey

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A. Yusuf Ali, G.V.Sc., *Assistant Research Officer*: animal nutrition

Ghulam Hyder, G.V.Sc. (Cal.), *Assistant Research Officer*: biological products

M. A. Quader, D.V.M.S. (Com.), *Assistant Research Officer*: pathology and bacteriology

PAKISTAN

M. H. Rahman, D.V.M.S. (Com.), *Assistant Research Officer*: animal genetics
Saleh Ahmed, G.V.Sc., *Assistant Research Officer*: parasitology
Z. Hasan, G.V.Sc. (Cal.), *Research Officer*: animal husbandry

Directorate of Fisheries

Dacca, East Pakistan

A. R. K. Zubari, M.Sc., M.S., Ph.D., *Director*

FRESH WATER FISHERIES

M. Youssouf Ali, B.Sc.Hons. (Cal.), M.Sc. (Brit.), Ph.D. (Brit.), *Deputy Director*:
biological management

Abdul Hakim Chokdar, M.Sc., *Research Officer*: limnology

Abdul Malek, B.Sc. (Dac.), *Assistant Research Officer*

Abdul Quader Choudhary, B.Sc.Hons., M.Sc., *Research Officer*: hilsa investigation

Ali Akbar, B.Sc. (Dac.), *Assistant Research Officer*

A. H. N. Naqvi, B.Sc. (Dac.), *Assistant Research Officer*

A. K. Ataur Rahman, M.Sc.Hons., *Research Officer*: parasitology

Enayetur Rahman, B.Sc. (Dac.), *Assistant Research Officer*

Golam Rasul, B.Sc. (Raj.), *Assistant Research Officer*

Liaquat Ali Khan, M.Sc., *Biometrician*: biometry

Masud Ahmad, M.Sc., *Research Officer*: malacology

Mohammad Mohsin Ali, M.Sc., *Research Officer*: water pollution

Mozaffar Hussain, B.Sc. (Dac.), *Assistant Research Officer*

Safiuddin Ahmad, M.Sc., *Research Officer*: fish biology

Shamsul Islam Khan, B.Sc. (Dac.), *Assistant Research Officer*

S. C. Dhar, B.Sc. (Dac.), *Assistant Research Officer*

Tabibur Rahman, B.Sc. (Raj.), *Assistant Research Officer*

TECHNOLOGICAL LABORATORY

S. A. Ali, B.Sc.Hons., M.Sc. (Alig.), M.S. (St.), *Deputy Director*: canning,
processing and preservation of fish

Ataur Rahim, M.Sc., *Fisheries Technologist*: fish protein

Shahidullah, B.Sc.Hons., *Fisheries Technologist*: fish by-products

Syed Fariduddin Ahmad, B.Sc.Hons., *Fisheries Technologist*: transport and
handling of fish

S. B. Bhattacharjee, B.Sc.Hons., M.Sc., *Fisheries Technologist*: chemistry of fish

DEPARTMENT OF FORESTS

Forest Research Laboratory, Chittagong

Q. Ghani, M.Sc. (Dac.), A.I.F.C., *Chief Conservator of Forests*

Abdul Latif, M.Sc., *Senior Research Officer*

Abdur Razzak, M.Sc., *Senior Research Officer*

Abdus Samad, B.Sc.Hons., *Statistician*

Abdus Sattar, M.Sc., *Senior Research Officer*

Abu Bakar Siddique, B.Sc., *Junior Research Officer*

Abul Quasem, B.Sc., *Junior Research Officer*

A. B. M. Salehuddin, M.Sc., D.O.V. & C.W.P.

A. Khaleque, M.Sc., *Senior Research Officer*

A. S. M. Zahiruddin, B.Sc., P.F.T.S., *Director*

Dilip Kumar Das, M.Sc., *Senior Research Officer*

Farhad Ali, B.Sc. (B.E.), D.O.W. & T.E.

Haroon Rashid, B.Sc., *Junior Research Officer*

M. A. Azizullah, M.Sc., *Junior Research Officer*

M. Sarwat Hussain, M.Sc., *D.O.W.P. & W.C.*
 M. Yakub, B.Sc., *Junior Research Officer*
 Omar Ali, M.Sc., *D.O.S. & T.P.*
 S. M. Hasan, B.A.Hons. (Oxon.), B.Sc.Agr., M.Sc.Agr., A.I.A.R.I., *D.F.O.*
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 S. R. Das Gupta, B.Sc., *Junior Research Officer*
 Yakub Ali Talukdar, B.Sc., *Junior Research Officer*
 Zafar Ali, B.Sc., *S.E.*

WEST PAKISTAN

DEPARTMENT OF AGRICULTURE

West Pakistan Secretariat, Lahore. Tel.: 66578

Ayub Agricultural Research Institute

Lyallpur, West Pakistan. Tel.: 3266. Cables: Agri Research

Khalifa Anwar Hussain, M.Sc.Hons. (Pb.), F.R.I.C. (Lond.), *Director*
 Abdul Ghafoor Bhatti, M.Sc.Agr. (Pb.), Ph.D. (Texas), *Maize Botanist*
 Abdul Ghani Arif, M.Sc.Agr. (Pb.), Ph.D. (Queens), *Plant Pathologist*
 Altaf Hussain, M.Sc.Agr. (Pb.), M.Sc. (A.U.B.), *Vegetable Botanist*
 Haji Fateh Muhammad, M.Sc.Agr. (Pb.), *Agricultural Chemist-II*
 Khawaja Abdul Haq, M.Sc.Agr. (Pb.), *Entomologist*
 Mehboob Ali, M.Sc.Agr. (Pb.), Ph.D. (Texas), *Cotton Botanist*
 Manzoor Ahmad Rajwa, M.Sc.Agr. (Pb.), *Economic Botanist*
 Manzoor Elahi Raja, M.Sc. (Calif.), *Agricultural Chemist-II*
 Mirza Mohammad Ibrahim Khan, M.Sc.Agr. (Pb.), *Agronomist*
 Muhammad Abdul Aziz, M.Sc.Agr. (Pb.), *Cereal Botanist*
 Muhammad Akhtar, M.A. (Pb.), *Statistician*
 Muhammad Shafi, M.Sc.Agr. (Pb.), M.Sc. (Minn.), *Rice Botanist*
 Musahib-ud-Din Khan, M.Sc.Agr. (Pb.), M.S. (Calif.), *Fodder Botanist*
 Sana Ullah, M.Sc.Agr. (Pb.), M.Sc., Ph.D. (Minn.), *Livestock Management Specialist*
 Shahab-ud-Din Fasihi, B.Sc.Agr. (Alig.), A.I.A.R.I., *Sugarcane Botanist*
 Shamshad Akhtar Khan, B.Sc.Agr. (Pb.), M.Sc. (Virg.), *Oilseeds Botanist*
 Sheikh Muhammad Umar, M.Sc.Hons. (Pb.), *Potato Botanist*
 Siraj-ud-Din Khan, M.Sc.Agr. (Pb.), *Cotton Botanist*

Agricultural Research Institute

Tandojam, Hyderabad, West Pakistan. Tel.: 3266

M. M. Siddiki, M.Sc. (Bom.), *Director*: soils and fertilizers

AGRICULTURE SECTION

A. M. Khan, M.Sc.Agr., *Agriculturist*: agronomy of sugarcane
 G. Khalid, B.Sc.Agr., *Seed Certification Officer*: viability of seeds
 G. Y. Solangi, B.Sc.Agr., *Assistant Sugarcane Botanist*: agronomy of sugarcane
 M. R. Lodhi, B.Sc.Agr., *Assistant Agronomist*: agronomy of potato
 Safdar Ali, M.Sc.Agr., *Assistant Agronomist*: agronomy of soyabean
 Zakir Ali, B.Sc.Agr., *Assistant Sugarcane Agronomist*: agronomy of sugarcane

WHEAT BOTANY SECTION

A. H. Chaudhry, M.Sc.Agr., *Assistant Botanist*: breeding of tobacco
 B. G. Sheikh, M.Sc.Agr., *Assistant Botanist*: breeding of wheat
 M. A. Mirza, M.Sc.Agr., *Assistant Botanist*: breeding of wheat and jawar
 M. A. Pasha, B.Sc.Agr., *Assistant Botanist*: breeding of millets
 M. Ilyas, M.Sc.Agr., *Assistant Botanist*: breeding of wheat

PAKISTAN

- N. M. Memon, M.Sc., *Assistant Botanist*: wheat improvement
T. H. Farooqi, B.Sc.Agr., *Assistant Botanist*: breeding of maize
Z. A. Munshi, M.Sc. (Bom.), *Cereal Botanist*: genetics and breeding of wheat

COTTON RESEARCH SECTION

- A. K. Almani, M.Sc.Agr., *Assistant Botanist*: morphological and cytological studies of cotton
A. M. Memon, Ph.D. (Tex.), *Botanist*: genetics, cytogenetics, breeding and agronomy of cotton
K. M. Bukhari, M.Sc.Agr., *Assistant Botanist*: evolution of long staple cotton
M. A. Ghaffar, M.Sc.Agr., *Assistant Botanist*: evolution of extra long staple cotton
N. N. Ansari, B.Sc.Agr., *Assistant Botanist*: evolution of medium and short staple cotton
S. Zahiruddin, M.Sc.Agr., *Assistant Botanist*: evolution of long, medium and short staple cotton
U. M. Vighio, B.Sc.Agr., *Assistant Breeder*: evolution of cotton varieties

CHEMISTRY SECTION

- A. A. Sheikh, M.Sc.Agr., *Assistant Soil Chemist*: physico-chemical analysis of soil
S. T. A. Naqvi, M.Sc.Agr., *Assistant Agricultural Chemist*: soil fertility and soil testing
T. M. Chaudhry, M.Sc.Agr., *Agriculture Chemist* and *Professor of Chemistry*: physico-chemical properties of soil, nitrification of fertilizers, composition of oil seeds and comparative study of soil

ENTOMOLOGICAL SECTION

- S. A. Moiz, M.Sc. (Alig.), M.S. (U.S.A.), *Entomologist*: control of insect pests
S. K. M. Naqvi, M.Sc., *Assistant Entomologist*: biological and ecological studies of borers

OILSEEDS SECTION

- A. H. Natali, M.Sc.Agr., *Assistant Botanist*: improvement of oilseeds
M. A. Baluch, M.Sc.Agr., *Associate Professor*: breeding of oilseeds
N. A. Merchant, B.Sc.Agr., *Assistant Botanist*: improvement of peanut

PLANT PATHOLOGICAL SECTION

- Akbar Khan, M.Sc.Agr., *Assistant Bacteriologist*: bacterial leaf spot disease of mango
H. A. Jagirdar, M.Sc.Agr., *Mycologist*: systematic mycology
M. A. Khan, M.Sc.Agr., *Assistant Bacteriologist*: fruit rots
M. Kamal, Ph.D., *Plant Pathologist*: physiology of fungi
M. M. S. Malik, Ph.D., D.I.C. (Lond.), *Associate Professor*: cereal smuts
Sardar Muhammad, M.Sc., *Assistant Virologist*: virus diseases of plants
S. A. Khan, M.Sc.Agr., *Assistant Mycologist*: systematic mycology

PLANT PHYSIOLOGICAL SECTION

- A. Jalis, Ph.D. (Fr.), *Plant Physiologist*: salt tolerance capacity of crops

STATISTICAL SECTION

- M. A. Malik, M.A. (Pb.), *Assistant Statistician*: statistical work
S. T. M. Naqvi, M.A., *Statistician*: statistical work

FRUIT RESEARCH STATION, Mirpurkhas, West Pakistan

- A. P. Jagirdar, M.Sc.Agr., *Horticulturist*: fruit culture
I. A. Rizvi, M.Sc.Agr., *Assistant Horticulturist*: fruit culture
M. H. Nizami, M.Sc., *Assistant Horticulturist*: problems of fruits and vegetables
N. Raza, M.Sc., *Assistant Food Technologist*: processing of jam and jellies

RICE RESEARCH STATION, Dokri

C. R. Managhirmalani, M.Sc., *Assistant Botanist*: evolution of varieties of cotton
 R. M. Abbasi, M.Sc.Agr., *Botanist*: manuring and fertilization of rice

Agricultural College

Tandojam, Hyderabad, West Pakistan

A. G. Pirzada, B.Agr. (Bom.), *Principal*
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 Abdul Hayee Somro, M.Sc.Agr. (Sind), *Assistant Professor of Zoology*
 Agha Habibullah, Dip. Agr. (Bom.), *Assistant Professor of Agriculture*
 Agha Karmullah, M.Sc.Agr. (Sind), *Assistant Professor of Agriculture*
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 Mohammad Amin Bhatti, B.Agr. (Bom.), A.I.D.R.I. (Bang.), *Professor of Animal Husbandry and Dairying*
 Mohamad Ishaque Memon, M.Sc.Agr. (Sind), *Assistant Professor of Botany*
 Mohammad Toaha Qureshi, M.Sc. (Sind), M.Sc. (A.U.B.), *Assistant Professor of Agricultural Economics*
 M. A. Balouch, M.Sc.Agr. (Sind), *Assistant Professor of Botany*
 M. M. S. Malik, B.Sc.Agr. (Madr.), Ph.D., D.I.C. (Lond.), *Assistant Professor of Plant Pathology*
 M. H. Pirzada, M.Sc.Agr. (Sind), M.Sc.Agr. (A.U.B.), *Associate Professor of Agriculture*
 M. A. Bukhari, M.Sc. (A.U.B.), *Assistant Professor of Horticulture*
 Nazir Ahmed Choudhry, M.Sc.Agr. (Sind), *Assistant Professor of Horticulture*
 Shaikh Abdul Sattar, M.Sc.Agr. (Sind), *Assistant Professor of Chemistry*
 Shaikh Mohammad Akhtar, M.Sc., *Assistant Professor, Veterinary*
 S. M. Naqvi, B.Sc.Agr., A.I.A.R.I., M.Sc. (Texas), *Professor of Agricultural Engineering*
 Zafar Hussain Abidi, M.Sc.Agr. (Sind), *Assistant Professor of Botany*

Agriculture Research Station, Quetta, West Pakistan

BIOCHEMISTRY/FOOD TECHNOLOGY SECTION

N. H. Khan, B.Sc.Agr., *Food Technologist*: processing of fruits

ECONOMIC BOTANY SECTION

M. Sayeed, M.Sc. (Pb.), *Assistant Botanist*: evolution of wheat varieties
 S. A. Qureshi, M.Sc.Agr. (Pb.), Ph.D. (U.S.A.), *Botanist*: breeding of maize and sorghum

ENTOMOLOGY SECTION

B. H. Qureshi, B.Sc., *Assistant Entomologist*: insect pests of deciduous trees
 M. A. Qayum, M.Sc. (Alig.), Ph.D. (Calif.), *Entomologist*: insect pests of deciduous trees

PAKISTAN

CHEMISTRY SECTION

- Jamil Ahmed, M.Sc.Agr., *Assistant Agricultural Chemist*: survey of irrigation water
Sharafatullah, M.Sc.Agr., *Fertilizer Conducting Officer*: comparative response of hybrid maize

HORTICULTURE SECTION

- A. H. Khan, M.Sc., *Horticulturist*: research on deciduous fruits
M. Yousuf, B.Sc.Agr., *Assistant Horticulturist*: research on deciduous fruits and vegetables

PLANT PATHOLOGY SECTION

- M. S. Mirza, M.Sc.Agr., *Mycologist*: eradication of fruit rots
S. A. Malik, M.Sc.Hons., *Plant Pathologist*: eradication of fruit rots and blights

Agricultural Research Institute

- Tarnab, Peshawar. Tel.: 2304. Cables: Agrisearch
Abdul Wahhab, T.I., M.Sc.Hons. (Pb.), M.Sc. (Calif.), Ph.D. (Pb.), D.Sc. (Pb.), F.R.I.C. (Lond.), *Director*: soil fertility and soil bacteriology

AGRONOMY SECTION

- S. A. Hussain, B.Sc.Agr. (Pesh.), *Seed Certification Officer*: agronomical research on crops
S. Kamal, B.Sc.Agr., B.T. (Pb.), M.Sc. (U.S.A.), *Agronomist*: agronomical research on sugarcane and sugar beets

BOTANY SECTION

- M. Siddiqi, B.Sc.Agr. (Pesh.), M.Sc.Agr. (A.U.B.), *Assistant Botanist*: tobacco
M. Sulyeman, B.Sc.Agr. (Pb.), A.I.A.R.I. (Delhi), *Economic Botanist*: cereals
S. B. Shah, B.Sc.Agr. (Pb.), M.Sc.Agr. (Utah), *Assistant Economic Botanist*: cereals

CHEMICAL SECTION

- A. Aziz, M.Sc. (Utah), A.I.A.R.I. (Delhi), *Agricultural Chemist*: soil and plant nutrition

ENTOMOLOGY SECTION

- M. Rashid, M.Sc.Agr., Ph.D. (Lond.), *Entomologist*: agricultural pests
S. Din, M.Sc.Agr., *Assistant Entomologist*: pests of sugarcane

FOOD TECHNOLOGY SECTION

- S. A. Khan, B.Sc.Agr. (Pb.), *Food Technologist*: food technology

HORTICULTURE SECTION

- I. U. Khan, B.Sc.Agr. (Pb.), M.Sc.Agr. (A.U.B.), *Assistant Horticulturist*: cultural and manurial studies on fruits
M. Said, M.Sc.Agr. (Pb.), M.S. (Calif.), *Horticulturist*: variety improvement in fruits and vegetables

MAIZE SECTION, D. I. Khan, West Pakistan

- K. Bahadur, B.Sc.Agr. (Pesh.), M.Sc.Agr. (U.S.A.), *Assistant Botanist*: maize breeding
M. H. Shah, M.Sc.Agr. (Pesh.), *Maize Botanist*: maize breeding and hybrid maize seed production

PASTURE SECTION

- M. M. Hassan, B.Sc.Agr. (Osm.), *Officer-in-Charge (Pasture)*: inheritance studies of pentafoolate character in *Trifolium alexandrinum*

PLANT PATHOLOGY SECTION

M. S. Bangash, M.Sc.Agr. (Pb.), A.I.A.R.I. (Delhi), *Plant Pathologist*: diseases of agricultural crops

SUGARCANE SECTION, Mardan, West Pakistan

O. Jan, B.Sc.Agr. (Pb.), A.I.A.R.I. (Delhi), *Head of Section*: sugarcane

R. A. Khan, B.Sc.Agr. (Agra), *Assistant Sugarcane Specialist*: sugarcane

W. W. Khan, B.Sc.Agr. (Pb.), *Assistant Botanist*: sugarbeet

Regional Directorates of Agriculture

M. S. Chaudhry, B.Sc.Agr. (Bom.), A.I.A.R.I., M.Sc., Ph.D. (Ariz.), *Director*, Hyderabad Region

Mohd. Shafi Gill, M.Sc.Agr. (Pb.), M.S. (Corn.), *Director*, Lahore Region

Razal Dad Khan, M.Sc.Agr., *Director*, Peshawar Region

ANTI-LOCUST ORGANIZATION

A. S. K. Ghouri, B.Sc.Agr. (Pb.), Ph.D. (McG.), *Deputy Director of Agriculture*: insect toxicology and ecology of locusts

Mumtaz Ali Khan, B.Sc.Agr., *Entomologist*: sunn pest and locust control

PLANT PROTECTION OFFICERS

Iqbal Wajih, B.Sc., *Hyderabad Region*

Ch. Ghulam Qadir, M.Sc.Agr. (Pb.), M.S., *Lahore Region*

Nazir Mohammad, B.Sc.Agr. (Pb.), *Peshawar Region*

DIRECTORATE OF SOIL CONSERVATION, Rawalpindi, West Pakistan

Abdur Rashid Khan, B.Sc.Agr., M.Sc.Agr., *Director*: genetical and agronomical research on cereals

M. A. Hameed Chaudhry, M.Sc.Agr., *Agronomist*: agronomic research

M. A. Mirza, F.Sc., P.F.R., Dip.For., *Forest Officer*: forestry

DEPARTMENT OF ANIMAL HUSBANDRY

College of Animal Husbandry

Lahore, West Pakistan. Tel.: 3414

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Mohammad Amin, M.Sc.Hons., *Assistant Professor*: biology

Mohammad Nawaz, L.V.P.Hons., B.V.Sc. (Pb.), M.Sc. (WSU), *Professor*: pathology

Mohammad Tufail Khan, L.V.P., B.V.Sc., M.S. (U.S.A.), *Associate Professor*: cultural study

Mohammad Yusaf Vaid, B.A., L.V.P., B.V.Sc., M.S. (U.S.A.), *Professor*: pharmacology

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Regional Directorate, Quetta, West Pakistan. Tel.: 2544. Cables: Biprod

M. Maqsood, M.Sc. (Mich.), Ph.D. (Cantab.), L.V.P.Hons. (Pb.), Dip. Orins (Oak Ridge), M.I.Biol. (Lond.), *Director*: biological services

PAKISTAN

Veterinary Research Institute

Harike Road, Lahore Cantt. Tel.: 2296. Cables: Pahari

M. M. Sarwar, B.V.Sc. (Pb.), Ph.D. (Lond.), *Director*: taxonomy and geographical distribution of nematodes

Anwar Ali Qureshi, L.V.P. (Pb.), M.Sc. (U.S.A.), *Research Officer*: toxoplasma

M. M. Huq, G.M.V.C., B.V.Sc. (Madr.), *Research Officer*: foot and mouth disease

Veterinary Research Institute, Peshawar

M. M. Huq, G.M.V.C. (Madr.), B.V.Sc. (Madr.), *Officer-in-Charge*

Abdul Aziz Khan, G.B.V.C. (Cal.), *Research Officer*: biological products

Anwar Ali Qureshi, L.V.P., M.Sc., *Research Officer*: tuberculosis

F. G. Ahmad, L.V.P. (Pb.), *Research Officer*: poultry husbandry

Mohammad Ashraf Qureshi, B.V.Sc., *Assistant Research Officer*: brucellosis

Mohammad Aslam Chaudhry, B.V.Sc., *Assistant Research Officer*: pathology and bacteriology

Mohammad Saleem, G.B.V.C. (Pat.), *Assistant Research Officer*: animal nutrition

M. Ghulam Mustafa, G.V.Sc., D.V.M.S., *Assistant Research Officer*: biological products

M. R. Bhuiya, G.V.Sc. (Cal.), *Assistant Research Officer*: mastitis

M. Y. Ansari, G.B.V.C. (Pat.), *Assistant Research Officer*: standardization

DIRECTORATE OF FISHERIES

Lahore, West Pakistan

Nazir Ahmad, M.Sc.Hons., Ph.D., D.Sc., F.L.S., F.Z.S., F.Z.S.I., F.A.Z., F.P.A.S., *Director*

Azhar Saleem, M.Sc., *Fisheries Chemist*

I. U. Naik, M.Sc., *Extra Assistant Director of Fisheries*

M. Abdul Waheed, B.Sc., *Extra Assistant Director of Fisheries*

Rana Abdul Waheed, B.Sc., *Extra Assistant Director of Fisheries*

M. Azhar Saleem, M.Sc.Agr., *Chemist*

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M. Ajmal Bhatti, B.Sc., *E.A.D.F.*

Shan Ahmad Naveed, M.Sc., *E.A.D.F.*

M. Z. Khan, M.Sc., *E.A.D.F.*

M. A. Saleem Ansari, M.Sc., Dip. Fish (Cal.), *Zoologist*

M. A. Waheed, B.Sc., *E.A.D.F.*

M. Aqil Shah, B.Sc., *E.A.D.F.*

Sufian Sajid, B.Sc., *E.A.D.F.*

DEPARTMENT OF FORESTS

West Pakistan Secretariat. Tel.: 3024

Mohammad Ihsan-ur-Rehman Khan, M.Sc.Agr., A.I.F.C.Hons., Dip.For. (Oxon.), M.F.Hons. (Yale), *Director*

Abdullah Arain, M.Sc., A.P.F.C., *Officer-in-Charge*

Abdul Ghani, B.Sc.Agr. (Pb.), A.P.F.C., *Officer-in-Charge*

Abdul Qadeer Khan, B.Sc.Agr., B.Sc.For. (Pesh.), *Officer-in-Charge*

Abdul Qayum, M.Sc. (Pb.), B.Sc.For. (Pesh.), *Officer-in-Charge*

Abu Said Khan, M.Sc.Agr., A.P.F.C., *Officer-in-Charge*

Ahsan Ahmad Maqbul Ahmad, B.Sc. (Alig.), A.P.F.C., *Officer-in-Charge*

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Anwar Masrur, M.Sc. (Pb.), B.Sc.For. (Pesh.), *Officer-in-Charge*

Faqir Muhammad Khan, B.Sc.Agr., B.Sc.For. (Pesh.), *Officer-in-Charge*

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 Ghaus Muhammad Khattak, B.Sc., A.I.F.C., *Officer-in-Charge*
 Ghulam Ahmad, B.Sc.Hons., A.P.F.C., *Conservator of Forests*
 Ghulam Rasul, M.Sc.Agr., A.P.F.C., *Conservator of Forests*
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E. S. Aidoo, B.Sc.Agr.: cereal processing

J. K. Amenu, B.Sc.Agr.(Lond.): food storage

J. E. M. Bartels, B.Sc.Agr.(Lond.), M.Sc.(Wis.): food economics and survey

J. Dei-Tutu, B.Sc.Agr.

J. K. des Bordes, A.M.I.Mech.E.(Lond.), A.I.I.A.(Manc.): food refrigeration engineering

Mrs. F. E. Dovlo, B.Sc.(Indiana): food planning, consumption and survey

K. K. Eyeson, B.Sc.(Lond.): food chemistry and analysis

B. L. Lartey, B.Sc.Agr.Eng. (McG.): food processing engineering

5. Forest Products Research Institute

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G. Owusu, B.Sc.Agr.Econ.: forest economics

FOREST PRODUCTS RESEARCH

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 O. M. Behringer, B.Sc.Eng.: timber mechanics
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P.O. Box 1433, Kumasi. Tel.: 2353, 2354. Cables: Chiefsoil

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 S. V. Adu, B.Sc.Hons.Geo.(Aberd.), Cert. of Air Photo Interpretation (Delft)
 G. K. Asamoah, B.Sc.Agr., M.Sc.Soils(Mich.)
 Agyeman Atwereboanda, B.Sc.Pl.Nut. and Soil Fert., M.Sc.Soil Chem.(Minn.)
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G. Dargie, M.S.A.(Br.Col.): depth of feeding of sugarcane in the black clays for irrigation water application depth
S. La-Anyane, B.Sc.(R'dg.), M.Sc.(Lond.): economic organization of agriculture in Western Africa

2. Department of Animal Science

A. S. B. Wilson, B.Sc.(Edin.), *Professor and Head of Department: evolution of new varieties of sheep, dairy cattle; improvement of indigenous types of beef cattle by selection; development of tropical pastures and forages*
L. N. K. Ababio, B.Sc.(Lond.), M.Sc.(Texas): performance of indigenous cattle and goats on different management and feeding regimes for beef and goat meat
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W. Rommel, Prof. Dr.med.vet.habil.(Leipzig): improving oestrous cycles in cattle during the breeding season
R. Rose-Innes, M.Sc.(Rand): ecology of West African tree savannas

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 E. V. Doku, B.Sc.(Lond.): selection and breeding of suitable food legumes
 P. Lamptey, B.Sc.(Iowa), M.Sc.(Ore.): isolation, purification and serological studies of cow pea viruses in Ghana
 E. F. G. Mante, B.Sc.(Calif.), M.S.A.(Br.Col.): potentialities and problems of irrigation on the Accra Plains

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 B. Hughes, B.Sc.: taxonomy and distribution of Ghanaian snakes
 R. Kumar, B.Sc., Ph.D.: taxonomy and biology of Hemiptera-Heteroptera
 W. Pople, M.Sc.: biology of the Volta River clam, *Egeria*
 J. Proszynski, M.Sc., D.Sc.: taxonomy of salticid spiders of Ghana

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 D. B. Boakye, B.Sc.Agr., M.Sc.(Arizona): plant protection
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 M. K. Buadu, B.V.M. & S.: animal production
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 R. Mulder, I.i.(Wag.): plant protection
 K. Opoku-Owusu, Dip.Landwirt., Dr.Agr.(Bonn): agricultural economics and farm management
 D. M. Osafo, B.Sc.(Lond.), M.Sc.(Arizona): plant production

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 S. Nair, B.Sc., M.Sc. (Mal.), *Applied Chemist* : characterization of natural rubber
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 C. A. K. Salgado, B.Sc. (Lond.), A.Inst.P., A.I.R.I.: specification testing and technical classification
 S. Sethu, B.E. Chem., M.Sc. Eng. (Lond.), D.I.C., A.M.I.I.Ch.E., *Chemical Engineer* : production and drying of crumb rubber and process development of new rubber
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B. S. Rao, M.A. (Madr.), D.P.P. (Brist.), F.R.E.S.: pests of *Hevea* and cover plants

D. H. Taysum, M.Sc. (Brist.), D.I.C. (Lond.): bacteriology of latex-bearing system

R. L. Wastie, M.A. (Oxon.), Ph.D. (Cantab.): root disease survey; leaf and branch diseases

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PLANT SCIENCE SECTION

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S. O. Boboye, B.Sc., *Research Officer*: entomology of citrus pests

PLANT PATHOLOGY

A. G. Bailey, B.Sc., D.A.S., D.T.A., *Senior Research Officer*: plant disease survey, rice and minor crop diseases
D. G. Robertson, M.A., D.A.S., *Senior Research Officer*: virus diseases of cowpea and rice

Rice Research Station

Badeggi, Northern Nigeria

B. D. A. Beck, B.Sc., D.A.S., D.T.A., *Principal Research Officer*: rice breeding
S. S. Patil, B.Sc., M.Sc., M.S., M.F.: rice breeding

Eastern Nigeria Sub-station

Umuahia

C. N. Ifeagwu, B.A., M.Sc., *Senior Research Officer*: yam breeding

STATISTICS AND RECORDS

B. Afonja, B.Sc., Dip. Stat., *Senior Research Officer*: agricultural statistics

FEDERAL FISHERIES SERVICES

Lagos

D. R. Niven, B.Sc., *Director*: exploratory and experimental fishing studies; distribution and abundance of the prawn, *Penaeus duorarum*
E. O. Bayagbona, B.Sc., *Principal Research Officer*: population including studies on biological races; growth rates: how abundance is related to rate of exploitation

NIGERIA

- A. J. Hopson, M.Sc., *Principal Research Officer*: biology of fishes on Lake Chad: life history, breeding cycles, growth rates and seasonal movements of economic species; mesh selectivity: how the species react to nets of varying mesh sizes
- E. N. C. Eziuzo, B.Sc., *Research Officer*: identification of fish larvae; quantitative studies of planktonic biomass
- V. O. Sagua, B.Sc., *Research Officer*: stomach contents of *Pseudotolithus typus* and *P. senegalensis*; biology of *Brachydeuterus aurita* and of the shad *Ethmalosa fibriata*
- J. G. Tobor, B.Sc., *Research Officer*: taxonomic examination and trawl species; biology of the catfishes, *Arius heudeloti*, *A. latiscutatus*
- J. de Vries, B.Sc., *Research Officer*: inventory of fish resources; compilation of data: preliminary prawn biological studies
- A. D. Onya, B.Sc., *Research Officer*: chemical composition of *Brachydeuterus aurita*; especially fat content relationship to feeding habit and growth; preliminary survey of parasites of economic fish species

FEDERAL DEPARTMENT OF FOREST RESEARCH

Ibadan, Western Nigeria

ADMINISTRATION

- C. F. A. Onochie, B.Sc., F.L.S., *Director of Forest Research*
- A. M. Oseni, M.A. (Cantab.), M.A. (Oxon.), *Deputy Director*
- J. R. Charter, M.A. (Cantab.), M.A. (Oxon.), *Senior Research Officer*: vegetation map of Nigeria; strict natural reserves; conservation and synecology of Nigerian vegetation; savanna burning

PATHOLOGY

- H. Roberts, B.Sc.Hons., Ph.D., *Senior Research Officer, Head*: entomologist
- Z. O. Momoh, B.Sc.Sp.Hons.Bot., *Research Officer*: forest diseases apart from those caused by insects and physiological disorders

PHYSIOLOGY

- S. T. Olatoye, B.Sc.Hons.Bot. (Lond.), *Research Officer*: mycorrhizal relationships of tropical pines; factors affecting germination and storage of tree seeds, growth investigations on seedlings of high forest species
- J. Mackenzie, M.Sc., *Research Officer*: seed supplies, storage and germination; growth of tree and seedlings in relation to environment and nursery practice; factors affecting the flowering of *Triplochiton scleroxylon*

SOILS

- B. S. K. Onweluzo, B.Sc.For., *Research Officer*: forest soils

SILVICULTURE

- R. H. Kemp, B.A.Hons.Nat.Sc. (Cantab.), *Principal Research Officer*: silvicultural research
- R. G. Lowe, B.A. (Cantab.), M.A., B.Sc. (Oxon.), *Research Officer*: silviculture
- K. Aladejana, B.Sc.Hons.Bot. (Lond.), B.A.For. (Oxon.), *Research Officer*: silvicultural research; plant breeding

School of Forestry

- D. M. Ward, B.Sc.For., *Acting Senior Research Officer and Acting Principal, School of Forestry*: forest education

TAXONOMY

- D. P. Stanfield, M.B.E., Dip.Agr., F.L.S., *Research Officer*: taxonomical research
- J. C. Okafor, B.Sc.For., *Research Officer*: plant taxonomy

UTILIZATION

- L. C. Okigbo, B.Sc. (Aberd.), *Acting Principal Research Officer and Head of Forest Products Research Laboratory*: solid wood
- E. B. Lucas, B.Sc.Eng. (Lond.), G.I.Mech.E., A.I.E.Sc., *Acting Senior Research Officer and Officer-in-Charge, Timber Mechanics Section*: mobil sawmill investigation and maintenance
- A. J. Combe, B.Sc.Hons. (Cardiff), Dip.Met.Mining, U.K. *Technical Assistance Adviser on Forest Products Research*
- D. E. Iyamabo, B.Sc. (Lond.), B.Sc.For. (Edin.), *Research Officer*
- N. Jones, B.Sc.For. (Wales), Dip.For. (Wales), M.Sc.For., *Research Officer*: general administration; tree breeding and nursery work

FEDERAL DEPARTMENT OF VETERINARY RESEARCH

Vom, Northern Nigeria

ADMINISTRATION

Vacant: *Director of Veterinary Research*

E. O. Ezebuoro, M.R.C.V.S., B.Vet.Med., Dip.Bact. (Lond.), *Deputy Director of Veterinary Research*: general administration

ANIMAL PRODUCTION

- K. Nixon, B.Sc., M.R.C.V.S., *Principal Research Officer*: breeding for milk production
- D. Slater, M.R.C.V.S., D.T.V.M., *Research Officer*
- F. G. Peers, M.A., D.Sc., *Research Officer and Biochemist*: toxicity studies in connection with aflatoxin nutritional research
- M. M. Ikeme, B.Sc., Dip.Biol., *Research Officer and Parasitologist*
- B. I. C. Okoye, B.Sc.Agr.Hons., *Acting Principal Research Officer*: breeding for milk production; fodder crop production
- C. A. Ogunbuyide, B.V.Sc., M.V.Sc., D.T.V.M., *Research Officer*: pig production with reference to utilization of local foodstuffs
- M. Zaffar-ud-din, L.V.P., B.V.Sc., *Research Officer*: maintenance of experimental culture
- A. S. Sohael, L.V.P., B.Sc., *Research Officer*: breeding for milk production

BACTERIOLOGY

- I. Macadam, Ph.D., B.Sc., M.R.C.V.S., Dip.Bact., *Principal Research Officer*: streptothricosis/virological research
- R. M. Griffin, M.R.C.V.S., B.Vet.Med.Hons., Dip.Bact. (Lond.), *Research Officer*: serological studies in contagious bovine pleuropneumonia
- P. G. T. Moren, Vet. degree (Stockholm), *Research Officer*: haemorrhagic septicaemia
- E. S. Fubra, M.Sc., B.Sc., *Research Officer*: vaccine production
- R. T. Haalstra, *Research Officer and Veterinary Surgeon*: streptothricosis
- A. A. Oyairo, D.V.M., *Research Officer*: diagnosis

VIROLOGY

- V. W. Smith, M.R.C.V.S., B.Sc., *Principal Research Officer*
- D. Zwart, B.Sc.Vet.Sc., Ph.D., *Senior Research Officer and Veterinary Surgeon*

Veterinary Training School

- L. N. Gleeson, M.D., L.M.S., D.M.V., M.R.C.V.S., *Principal*: animal health and husbandry diploma course
- J. Beirne, L.R.C.P., L.R.C.S., L.M., M.R.C.V.S., *Senior Veterinary Education Officer*: anatomy

NIGERIA

- H. T. B. Hall, B.V.Sc., M.R.C.V.S., *Veterinary Education Officer*: animal husbandry
D. A. G. Bretton, B.V.M.S., M.R.C.V.S., *Veterinary Education Officer*: pharmacology, etc.
K. B. David-West, D.V.M., *Research Officer*: clinic and veterinary education

NIGERIAN INSTITUTE FOR OIL PALM RESEARCH

Benin, Mid-Western Nigeria

ADMINISTRATION

- S. C. Nwanze, D.L.C.Chem.Eng., A.M.I.Chem.Eng., *Director*: palm oil and kernel processing methods and control; factors affecting palm oil quality
J. A. F. M. Sly, B.Sc., A.R.C.S., Dip.Agr.Sc., D.T.A., *Acting Deputy Director*: relation between leaf analysis, soil analysis and growth and production of the palms

AGRONOMY

- R. D. Sheldrick, M.A., A.I.C.T.A., *Senior Scientific Officer (Agronomist)*: seedlings in pre-nurseries and nurseries; supervision of field experiments with particular reference to oil palm responses to fertilizers; control of weeds and herbs in palm plantation and mechanization of plantation maintenance

PLANT BREEDING

- T. Menendez, B.Sc.Bot., *Plant Breeder, Senior Scientific Officer*: selection and breeding of oil palms; sterility in *pisifera* palms; relations between sex ratio, shell thickness and fruit to bunch ratio; general inheritance and anatomical studies

PLANT PATHOLOGY

- F. O. Aderungboye, B.Sc.Bot., *Research Officer*
K. Rajagopalan, B.A. (Madr.), Assoc.I.A.R.I., *Scientific Officer (Plant Pathologist)*

SOIL CHEMISTRY

- St. C. M. Forde, M.S.A., *Soil Chemist, Senior Scientific Officer*: soil changes in areas being developed for oil palm cultivation; nutrient status of such soils in relation to fertilizer requirements

COCOA RESEARCH INSTITUTE OF NIGERIA

Ibadan, Western Nigeria

ADMINISTRATION

- L. K. Opeke, B.Sc., Ph.D., *Director*: cocoa breeding, methods of overcoming self-incompatibility in cocoa
L. A. Are, B.Sc., M.Sc., Ph.D., *Acting Deputy Director*: methods of establishing cocoa

AGRONOMY

- O. Adegboyega, B.Sc., D.I.C., *Research Officer*: statistical designs for use with tropical tree crops
G. A. Ashiru, B.Sc., *Research Officer*: chemical methods of weed control in cocoa plantations
O. A. Odegbare, B.Sc., *Research Officer*: agronomic requirements of the kola tree

PLANT BREEDING

- C. L. M. van Eijnatten, L.I., *Principal Research Officer*: improvement of the kola crop
 H. Toxopeus, L.I., *Senior Research Officer*
 G. E. Okoloko, B.Sc., *Research Officer*: horitculture
 J. A. Williams, B.Sc., *Research Officer*: field experiments
 O. A. Atanda, B.Sc., *Horticulturist*: studies in methods of vegetative propagation
 V. Jacob, B.Sc., M.Sc., *Research Officer*: development of high yielding hybrids of cocoa

PLANT PATHOLOGY

- G. Weststeijn, L.I., *Research Officer*: epidemiology, physiologic differentiation and methods of infection of *Phytophthora palmivora*
 M. O. K. Adegbola, B.Sc., *Research Officer*: availability of virus in different cocoa varieties
 E. K. Okaisabor, B.Sc., *Research Officer*: epidemiology of *P. palmivora*
 E. C. K. Igwegbe, B.Sc., *Research Officer*: availability of virus in different cocoa varieties

CHEMISTRY

- N. E. Egbe, B.Sc., A.I.C.T.A., *Acting Principal Research Officer*: soil fertility
 M. Wessel, L.I., *Senior Research Officer*: effect of fertilizers on yield and growth of cocoa trees
 S. C. O. Ogundipe, B.Sc., *Research Officer*: micro-nutrient deficiency
 T. I. Omotosho, B.Sc., *Research Officer*: soil chemistry and fertility in relation to the kola tree
 D. Okunade, B.Sc., *Research Officer*: analysis of cocoa beans for butter-fat content

ENTOMOLOGY

- B. M. Gerard, B.Sc., Ph.D., A.R.C.S., F.R.E.S., *Principal Research Officer*: rearing cocoa mirids in captivity
 S. A. Apeji, B.Sc., Ph.D., *Research Officer*: insect pests of cocoa and their methods of control
 T. Youdeowei, B.Sc., F.R.E.S., *Research Officer*: effect of different insecticides on the population levels of minor pests of cocoa
 W. A. Eguagie, B.Sc., *Research Officer*: mirid (capsid) control
 L. C. Madubunyi, B.Sc., *Research Officer*: pests of kola and coffee
 S. M. Okiwelu, B.Sc., *Research Officer*: pests of kola and coffee

PLANTATION MANAGEMENT

- O. Oyatobo, B.Sc., *Agricultural Officer*: comparative costs of plantation and peasant methods of cocoa production

EASTERN NIGERIA

MINISTRY OF AGRICULTURE

Agricultural Research Station

Umudike

ADMINISTRATION

- E. U. Isang, M.Sc., *Chief Agricultural Officer*: general administration

AGRONOMY

- G. T. Okonkwo, B.Sc.Spec. (Lond.), D.T.A., *Senior Research Officer*: agronomy

NIGERIA

ANIMAL HUSBANDRY

- F. C. Obioha, B.Sc.Hons. (Lond.), *Agricultural Officer*: animal husbandry
C. E. Anthony, Dip.Agr. (H.A.C.), N.D.A., *Agricultural Superintendent*: animal husbandry

BOTANY

- L. S. O. Ene, B.Sc. (Lond.), Ph.D. (Manc.), *Senior Research Officer*: botany

CHEMISTRY AND SOIL

- N. N. Agbim, B.Sc.Hons. (Lond.), *Research Officer*: chemistry
D. M. Lang, B.Sc.Hons. (Lond.), *Research Officer* (U.K. Technical Aid): soil survey
W. M. Corbet, M.Sc. (Edin.), *Research Officer* (U.K. Technical Aid): soil survey
A. O. Nnodi, B.Sc., (Lond.), *Research Officer*: soil survey
E. J. Udoh, B.Sc. (Lond.), *Research Officer*: chemistry

RECORDS AND STATISTICS

- J. K. Obi, Cert.Agr., *Senior Research Officer*: statistics

ZOOLOGY

- Mrs. K. L. Unny, B.Sc.Hons., M.A. (Madr.), *Senior Research Officer*: soil nematodes of economic crops

MID-WESTERN NIGERIA

MINISTRY OF AGRICULTURE AND NATURAL RESOURCES

Research Division

Benin

ADMINISTRATION

- J. V. Waterworth, B.Sc. (Nott.), D.T.A., *Acting Assistant Chief Agricultural Officer (Research)*: in charge of research

AGRONOMY

- C. O. Oputa, B.Sc.Agr. (Lond.), *Agricultural Officer (Experiments)*: agronomy
R. A. Odihirin, B.Sc. (Lond.), M.Sc. (N.J.S.U.), *Research Officer*: special duties

PLANT PROTECTION

- S. O. Obamwonyi, B.Sc., M.Sc., *Senior Agricultural Superintendent*: plant protection
Mrs. C. I. Emokpare, B.Sc. (Lond.), *Research Officer*

RUBBER RESEARCH

- D. Robertson, B.Sc. (Penn.), U.S.A.I.D. *Horticultural Adviser*: in charge of rubber research station

WESTERN NIGERIA

MINISTRY OF AGRICULTURE AND NATURAL RESOURCES

Agricultural Research Division

Ibadan. Tel.: 21011/772 21677

ADMINISTRATION

- B. O. E. Amon, B.Sc.Hons., B.Agr.Hons., *Chief Agricultural Research Officer*: general administration; soil fertility

CROP HUSBANDRY

- B. O. Akinbode, B.Sc. (Lond.), A.I.C.T.A., *Principal Research Officer*: agronomy of sugarcane and food crop
 E. F. I. Baker, B.Sc.Hons., *Acting Principal Research Officer*: agronomy of arable crops
 B. O. Adelana, B.Sc.Agr. (Lond.), *Agricultural Officer*: agronomy of legumes
 R. T. Lewis, B.Sc.Agr., M.Sc.Agr.Eng., A.M.I.Agr.E., *Irrigation Agronomist*: sugarcane and maize

CHEMISTRY

- A. R. Bromfield, B.Sc., M.Sc., Dip.Agr.Sc., *Agricultural Chemist*: laboratory analysis, phosphorus uptake

ENTOMOLOGY

- S. A. O. Adeyemi, B.Sc.Agr. (Lond.), M.Sc.Agr. (Lond.), D.I.C., *Entomologist*: stored products and field crops
 J. Donnelly, B.Sc.Hons., *Entomologist*: insect pests of food crops

PLANT BREEDING

- H. C. Wiggin, B.Sc., Ph.D., U.S.A.I.D. *Plant Breeder*: development of maize in-breeds suitable for synthetics and varietal hybrids

PASTURE

- E. A. O. Onayinka, B.Sc.Agr. (Lond.), M.Sc.Agr. (R'dg.), *Agronomist*: tropical grasses and legumes

PLANT PATHOLOGY

- J. H. Simons, B.Sc.Hons., D.T.A., *Senior Research Officer*: diseases of citrus and maize
 M. O. Adeniji, B.Sc. (Lond.), M.Sc., Ph.D. (Nott.), *Plant Pathologist*: diseases of kenaf, sunflower, tomato

SOIL AND LAND USE SURVEY

- R. E. Dutton, B.S.Agr. (Nevada), U.S.A.I.D. *Soils Specialist (Land Classification)*: aerial photos and staff training semi-detailed soil survey of Western Nigeria; soil classification
 B. D. Acres, B.A., M.Sc., *Soil Scientist*: field soil survey
 T. I. Ashaye, B.Sc.Agr. (Lond.), Ph.D. (Nott.), *Soil Scientist*: field soil survey, soil genesis and classification

BIOMETRICS

- P. Walker, B.A. (Cantab.), Dip.Math.Stat., *Statistician*: design and analysis of field and laboratory experiments

ZOOLOGY

- C. O. Everard, B.Sc.Hons., *Zoologist*: vertebrate pests, particularly rodents

NORTHERN NIGERIA

MINISTRY OF AGRICULTURE

Private Mail Bag 2015, Kaduna

(see also under Ahmadu Bello University, pages 409-411)

- J. T. Shambaugh, B.Sc., U.S.A.I.D. *Agricultural Engineer*: agricultural engineering research at Maiduguri

NIGERIA

- M. J. Morgan, B.Sc. (Texas A. & M.), M.Sc. (Okla. A. & M.), *U.S.A.I.D. Agricultural Engineer*: agricultural engineering research at Bida
- Miss C. E. Cooper, B.Sc.Hom.Econ., M.Sc.Ext., *F.A.O. Home Economist*: socio-economic survey of peasant agriculture in selected sample areas in Northern Nigeria
- V. Y. Kolhatkar, B.Com. (Bom.), M.Sc.Econ. (Lond.), *F.A.O. Agricultural Economist*: socio-economic survey of peasant agriculture in selected sample areas in Northern Nigeria
- D. S. Gill, Ph.D.Agr.Ext., *F.A.O. Agricultural Extension Specialist*: socio-economic survey of peasant agriculture in selected sample areas in Northern Nigeria

UNIVERSITIES

UNIVERSITY OF NIGERIA

Nsukka, Eastern Nigeria

Faculty of Agriculture

DEPARTMENT OF AGRICULTURAL ECONOMICS

- K. T. Payne, B.Sc. (Kan.), M.Sc., Ph.D. (Minn.), *Professor and Chairman, Dean of Faculty and Head of Department*: Michigan State University Adviser
- I. O. Akobundu, B.Sc., *Teaching Assistant*
- M. H. Billings, B.A., Ph.D., *Research Associate*, Econ. Development Institute: research

DEPARTMENT OF AGRICULTURAL ENGINEERING/MECHANIZATION

- B. F. Cargill, B.S. (Mich.), M.S. (Mich.), Ph.D. (Mo.), *Head*
- A. A. Bahasoean, *Lecturer*
- J. L. Drury, B.S. (Mich.), *Lecturer*

DEPARTMENT OF ANIMAL SCIENCE

- R. J. Deans, B.Sc., M.Sc., Ph.D. (Mich.), *Associate Professor, Adviser and Head of Department*
- S. R. Atai, S.D.P.H. (Glas.), B.Sc. (Ill.), M.Sc. (Ill.), *Lecturer*
- N. E. Eshiet, B.A., M.Sc. (Wash.), *Lecturer*: animal husbandry
- A. U. Mba, B.Sc. (Dunelm.), Ph.D., *Lecturer*: agricultural biochemistry
- A. S. Wood, B.Sc., M.Sc. (Minn.), Ph.D. (Minn.), *Lecturer*: animal husbandry

FARM DEVELOPMENT DIVISION

- D. F. Wagner, B.S. (Kan.), M.S. (Kan.), *Adviser in Farm Management*: Head, Farm Operation Division

DEPARTMENT OF PLANT/SOIL SCIENCE

- B. N. Okigbo, B.Sc. (Wash.), M.Sc. (Corn.), Ph.D. (Corn.), *Associate Professor and Head of Department*
- D. M. Ekpote, B.Sc. (Lond.), Ph.D. (Lond.), D.I.C., *Lecturer*
- R. E. Fore, B.S., M.S. (Ill.), Ph.D. (Ill.), *M.S.U. Adviser in Plant/Soil Science*
- C. Oyolu, B.Sc. (Dunelm), B.Sc.Hons. (Dunelm), Ph.D. (Dunelm), *Senior Lecturer*
- G. P. Tewari, B.Sc., M.Sc. (Minn.), Ph.D. (Minn.), *Senior Lecturer*

DEPARTMENT OF VETERINARY SCIENCE

- G. R. Moore, B.A., D.V.M. (Mich.), M.S. (Kan.), *Professor and M.S.U. Adviser, Head of Department*

- V. Braide, D.V.M. (Corn.), *Lecturer*
 T. T. Isoun, B.Sc. (Mich.), D.V.M. (Mich.), *Lecturer*
 Mrs. M. Isoun, B.Sc., M.S. (Mich.), *Temp. Assistant Lecturer*
 H. R. Kapur, M.R.C.V.S. (Lond.), B.Sc. (Pb.), *Government Liaison Officer:*
 lecturing and programme co-ordination
 J. Kramer, B.Sc. (Mich.), D.V.M. (Mich.), *M.S.U. Adviser in Veterinary Pathology*
 O. Nduaka, B.V.M.S. (Glas.), *Lecturer*
 F. J. Siccardi, D.V.M., *Lecturer: M.S.U. Adviser*
 M. Uzoukwu, B.V.M.S. (Glas.), *Lecturer: M.S.U. Adviser*

UNIVERSITY OF IBADAN

Ibadan, Western Nigeria

Faculty of Agriculture

DEPARTMENT OF AGRICULTURAL ORGANIZATION

- H. A. Oluwasanmi, B.A., M.A., Ph.D. (Harv.), *Dean of Faculty of Agriculture, Professor of Agricultural Economics and Head of Department*
 H. T. E. Smith, B.Sc.Agr. (R'dg.), *Senior Lecturer: agricultural extension education*
 M. Upton, M.Sc.Agr. (R'dg.), Dip.Farm.Man. (Leeds), *Lecturer: agricultural economics and farm management*
 Q. B. Anthonio, B.Sc.Agr. (Lond.), Dip.Agr.Econ. (Oxon.), *Lecturer: agricultural extension education*
 N. G. Roling, Ir. (Wag.), *Lecturer: rural sociology*
 J. N. Abaelu, M.Sc. (Lond.), *Temporary Lecturer: agricultural economics*
 R. O. Adegboye, M.Sc. (Ohio), Ph.D. (Iowa), *Temporary Lecturer: agricultural economics*

DEPARTMENT OF AGRICULTURE

- A. N. A. Modebe, M.Agr.Sc., Ph.D., *Professor and Head*
 R. E. Buller, M.Sc., Ph.D., *Visiting Associate Professor: pasture and fodder crops*
 M. F. Lindsey, M.Sc., Ph.D., *Visiting Senior Professor: plant breeding, maize*
 B. A. C. Enyi, M.Sc. Agr. (Lond.), *Lecturer: crop husbandry*
 F. O. C. Ezedinma, B.Sc., M.Sc. (Lond.), *Post-doctoral Research Fellow* (seconded from Federal Department of Agricultural Research): crop husbandry
 H. R. Chheda, M.Sc. (Gujar.), M.Tech. (Kharagpur), Ph.D. (Okla.), N.D.Agr.E., *Lecturer: plant breeding*
 F. O. Aboaba, B.Sc.Agr. (Lond.), M.Sc.Agr. (Dunelm.), N.D.Agr.E., *Lecturer: agricultural engineering and mechanization*

DEPARTMENT OF AGRICULTURAL BIOLOGY

- B. Hopkins, B.Sc. (Manc.), Ph.D. (Lond.), M.I.Biol., *Senior Lecturer and Acting Head: plant ecology (forest and savanna)*
 T. A. Taylor, B.Sc. (Lond.), Ph.D. (Dun.), F.R.E.S., *Post-doctoral Research Fellow: entomology*
 D. U. U. Okali, B.Sc. (Lond.), Ph.D. (Sheff.), *Post-doctoral Research Fellow: research in weed ecology*
 O. F. Esuruoso, B.Sc. (Manc.), Ph.D. (Lond.), D.I.C. (Lond.), *Lecturer: plant pathology*

DEPARTMENT OF AGRICULTURAL CHEMISTRY AND SOILS

- V. A. Oyenuga, B.Sc., Ph.D. (Dunelm), F.R.I.C., *Professor and Head*
 H. Vine, B.Sc., Ph.D. (Lond.), A.I.C.T.A., A.R.I.C., *Associate Professor: soil science*

NIGERIA

- F. O. Olubajo, B.Sc. (Ill.), M.Sc. (Ohio), *Lecturer*: agricultural biochemistry and nutrition
W. O. Enwezor, M.Sc. (Lond.), *Lecturer*
H. O. Uwaegbute, B.Sc.Agr.Chem., Ph.D. (Nott.), *Post-doctoral Research Fellow*

DEPARTMENT OF FORESTRY

- J. Wyatt-Smith, M.A., B.Sc. (Oxon.), *Project Manager, United Nations Special Fund*: silviculture of lowland rain forest
J. F. Redhead, B.Sc. (Edin.), Dip.For. (Oxon.), *Lecturer, United Nations Special Fund*: vegetation types in lowland rain forest
J. H. Burgh, M.A. (Oxon.), *Lecturer, United Nations Special Fund*: forest engineering and utilization
K. F. S. King, LL.B. (Lond.), B.Sc. (Wales), D.Phil. (Oxon.), *Lecturer, United Nations Special Fund*: forest law
A. J. Leslie, B.Sc., M.Sc. (Melb.), *Lecturer, United Nations Special Fund*: forest economics and management

THE UNIVERSITY OF IFE

Ibadan Branch, Ibadan. Tel.: 22261 Ext. 1. Cables: Ifevarsity

Faculty of Agriculture

- A. A. Adegbola, B.Sc.Agr., M.S., Ph.D., *Acting Head of Faculty*: pasture and fodder crops; range management

DEPARTMENT OF AGRICULTURAL ECONOMICS

- C. O. Ilori, B.Sc.Agr., M.S.A., Ph.D.: production economics; agricultural marketing and planning
I. A. Russell, B.Sc.Agr., M.Sc.Agr.: farm management
W. A. Tompkins, B.S., M.S., Ph.D.: farm management

DEPARTMENT OF ANIMAL SCIENCE

- F. W. Stratman, B.S., M.S., Ph.D.: animal production; swine science

DEPARTMENT OF EXTENSION EDUCATION AND RURAL SOCIOLOGY

- R. C. Clark, B.S., M.S., Ph.D.: extension methods and rural sociology

DEPARTMENT OF PLANT SCIENCE

- A. A. Agboola, B.S., M.S.: crop production
C. L. Barth, B.S.Agr.Sc., B.S.Agr.Eng., M.S.Agr.Eng.: agricultural engineering
J. G. Berbee, B.Sc., M.F., Ph.D.: plant pathology
O. B. Combs, B.S., M.S.: horticulture
J. L. Libby, B.S., M.S., Ph.D.: entomology
B. E. Onochie, B.Sc.Agr., M.Sc.: agronomy of tropical crops

DEPARTMENT OF SOIL SCIENCE

- H. Folster, Diplomlandwirt, Dr.rer.agr.: pedology
E. O. Jaiyebo, B.Sc.Agr., M.Sc.Agr.: soil and plant nutrition; soil management
E. E. Schulte, B.S., M.S., Ph.D.: plant nutrition

AHMADU BELLO UNIVERSITY

Zaria, Northern Nigeria

Faculty of Agriculture and

Institute for Agricultural Research

Samaru, Zaria, Northern Nigeria

(The Institute carries out the agricultural research programme for Northern Nigeria.)

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R. W. H. J. Wilson, M.R.C.V.S., *Veterinary Officer: contagious bovine pleuropneumonia*
R. S. Windsor, B.Sc., B.V.M.S., M.R.C.V.S., *Veterinary Research Officer-in-Charge: diagnosis*

Veterinary Experimental Station

P.O. Box 25, Naivasha, Kenya

- P. S. Dawe, B.V.M.S., M.R.C.V.S., *Veterinary Research Officer: rickettsiosis*

Tsetse Survey and Control

P.O. Kabete

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W. P. Langridge, *Field Zoologist: bionomics, physiology of attractants*
B. T. Parsons, M.A., B.Sc. (Oxon.), *Field Zoologist: experimental chemotherapy*
E. D. Steel, B.Sc., Ph.D. (Nott.), *immunology*

Wellcome Institute for Research on Foot-and-Mouth Disease

P.O. Box 18201, Nairobi. Tel.: 58686

- N. J. Fernandes, M.Sc., B.Sc.: virology
A. J. M. Garland, B.V.M.S., M.R.C.V.S., *Veterinary Research Officer: virology*

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J. B. M. Smart, B.Sc. (Edin.), *Deputy Chief Conservator of Forests*
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EGERTON AGRICULTURAL COLLEGE

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J. A. Pupius, B.Sc.Econ.: agricultural economics
J. H. Robertson, B.S., M.S., Ph.D. (Neb.): range management
C. E. Thierstein, B.S., M.S. (Kan.): agricultural engineering
E. C. Trump, B.Sc. (Wales), M.I.Biol.: botany

COFFEE RESEARCH FOUNDATION

Coffee Research Station, P.O. Box 4, Ruiru, Kenya. Tel.: 27 Ruiru

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D. E. Evans, B.Sc. (Lond.), D.I.C., *Entomologist*
A. Mehlich, B.Sc.Agr., M.Sc., Ph.D. (Wis.), *Chemist*
Mrs. W. Nicholls, B.Sc. (Wales), *Plant Physiologist*
J. M. Northmore, B.Sc. (Lond.), A.R.I.C., *Chemist*
J. J. Ondieki, B.Sc.Agr. (Alld.), M.Sc. (McG.), *Plant Pathologist*
R. Z. Patel, B.Sc. (Bom.), *Chemist*
H. Vermeulen, L.I. (Wag.), *Plant Pathologist*
W. W. Wapakala, B.Sc.Agr. (Pb.), M.Sc. (West Pak.): *field investigations*
A. E. Wootton, B.Sc., A.R.I.C., *Plant Physiologist*
T. M. Wormer, L.I., Dr.Agr.Sc. (Wag.), *Plant Physiologist*

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MINISTRY OF NATURAL RESOURCES

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CHITEDZE AGRICULTURAL RESEARCH STATION

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W. D. Chona, B.Sc.(Rhodes), *Agricultural Chemist*
R. A. J. Cox, B.Sc.(R'dg.), D.T.A.(Trin.), N.D.A., N.D.D., *Annual Crop Agronomist*
N. F. Lungu, B.Sc.(Lond.), *Agricultural Chemist*
C. E. Micongwe, B.Sc.(Mich.), *Tobacco Agronomist*
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D. Nurse, B.Sc.(Hull), Dip.Agr.(Cantab.), D.I.C., *Plant Pathologist*
P. Panje, B.Sc.(Dunelm), *Agricultural Chemist*
H. N. G. Selley, B.Sc.(Sheff.), *Plant Breeder*

BVUMBWE EXPERIMENT STATION

P.O. Box 748, Limbe. Tel.: Bvumbwe 206

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M. A. Siddiqi, M.Sc.(Alig.), Ph.D.(Wales), *Plant Pathologist (Coffee)*

MAKANGA EXPERIMENT STATION

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R. Gausi, B.Sc.(Lond.), *Cotton Specialist*

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P.O. Box 34, Zomba. Tel.: Zomba 621. Cables: Resources, Zomba

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G. E. Crichton, B.Sc.(Edin.), *Conservator of Forests (Management)*
B. R. Fuller, B.Sc.(Lond.), A.R.C.S., *Conservator of Forests (Operations)*

Silvicultural Research Branch

Private Bag 6, Dedza. Tel.: Dedza 0-3012. Cables: Silvic, Dedza

D. L. Foot, B.Sc.(Edin.), *Silviculturist*
P. Anderson, M.F.(Den.), *Tree Breeder*

**DEPARTMENT OF VETERINARY SERVICES AND
ANIMAL HUSBANDRY**

P.O. Box 34, Zomba. Tel.: Zomba 621. Cables: Resources, Zomba

Administrative

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UNIVERSITY OF MALAWI

P.O. Box 200, Limbe. Tel.: Limbe 5911. Cables: University, Limbe

Department of Botany

G. K. Berrie, B.Sc.(Manc.), Ph.D.(Lond.), *Professor of Botany*: cytology and cytology, especially lower plants

P. Mwanza, B.Sc.(Lond.), Ph.D.(Ohio), *Lecturer in Botany*: plant pathology

Department of Zoology

Mrs. M. Kalk, B.Sc.(Lond.), Ph.D.(Rand), *Professor of Zoology*: ecological physiology, aquatic animals

M. Soulé, B.A.(San Diego), M.A., Ph.D.(Stanford), *Lecturer in Zoology*: population biology

MALTA, G.C.

DEPARTMENT OF AGRICULTURE

93 Archbishop Street, Valletta. Tel.: 24941. Cables: Agriculture, Malta
Telex: Malta 237

A. S. Farrugia, B.Com., B.Sc.Econ., *Head of Department*

Horticulture Section

F. F. Portelli, B.Pharm., B.Sc.Hort.(Nott.), *Horticulturist*

Land and Water Use Section

A. Scicluna Spiteri, B.Pharm., B.Sc.Agr., M.Sc.SoilSc.(Dunelm), F.R.M.S.,
Agricultural Chemist

Plant Pathology and Entomology

L. J. Saliba, B.Sc.(Malta & Lond.), B.Pharm., M.I.Biol., F.R.E.S.

Veterinary Services

A. J. Cassar, B.Sc., M.R.C.V.S., B.V.Sc., *Chief Government Veterinary Surgeon*

G. G. Alton, B.Sc., M.R.C.V.S.: brucellosis research

R. W. Crowther, B.Sc., M.R.C.V.S.: veterinary services

ZAMBIA

MINISTRY OF AGRICULTURE

P.O. Box 1957, Lusaka. Tel.: 72704/72951. Cables: Minagric, Lusaka

Administrative

I. S. Hutcheson, B.Sc., *Director*

I. H. Muchangwe, B.Sc., *Liaison Officer*

DEPARTMENT OF AGRICULTURE

P.O. Box 563, Lusaka. Tel.: 73164. Cables: Depagric, Lusaka

A. T. Wilson, B.Sc., Dip.Agr.(Cantab.), D.T.A., *Deputy Director (Research Planning and Settlement)*

J. S. Blacklock, Dip.Agr., C.D.D., A.I.C.T.A., *Acting Deputy Director (Extension)*

1. Agricultural Research Section

MOUNT MAKULU CENTRAL RESEARCH STATION

P.O. Box 7, Chilanga. Tel.: 312. Cables: Research, Chilanga

A. O. Ballantyne, B.Sc., Ph.D.(Edin.), *Chief Research Officer*

R. W. James, B.Sc.(St. And.), *Assistant Chief Research Officer: Senior Plant Breeder*

J. B. Abington, B.Sc.(Manc.), D.A.S.(Cantab.), *Plant Breeder*

J. I. Alexander, B.Sc.(Aberd.), D.T.A.(Trin.), *Principal Research Officer (Agronomy): Senior Agronomist*

J. Anton-Smith, B.Sc., Dip.Agr.(Cantab.), D.T.A.(Trin.), *Agronomist*

J. B. Bryden, M.A.(Cantab.), M.Sc.(Wales), *Entomologist*

R. F. Herbert, B.Sc.(Leeds), L.R.I.C., *Agricultural Chemist*

J. C. Hoyle, B.A.(Cantab.), D.T.A.(Trin.), *Seeds Officer*

R. M. Lawton, M.A.(Oxon.), B.Sc.(Oxon.), *Ecologist*

G. Pope, B.Sc.Bot.(Natal), *Plant Pathologist*

D. L. Proctor, B.Sc.Zool.(Wales), *Stored Products Entomologist*

H. J. van Rensburg, M.Sc.(Rand), *Pasture Research Officer*

A. Rothwell, B.Sc.(Leeds), *Senior Plant Pathologist*

J. B. M. Vogt, M.Sc.(Amst.), *Principal Research Officer (Specialist): Senior Agricultural Chemist*

(a) AT BROKEN HILL REGIONAL EXPERIMENT STATION

P.O. Box 908, Broken Hill. Tel: 2774. Cables: Agricola, Broken Hill

E. B. Bowles, B.Sc., Dip.Agr.(Cantab.), D.T.A., *Agronomist-in-Charge*

(b) AT COPPERBELT REGIONAL EXPERIMENT STATION

P.O. Box 668, Mufulira. Tel.: 280125. Cables: Agricola, Mufulira

G. M. Tout, B.Sc.Agr. (R'dg.), Dip.Agr.(Cantab.), D.T.A.(Trin.), *Agronomist-in-Charge*

G. Melhuish, B.Sc.(Wales), *Agronomist*

(c) AT MAGOYE REGIONAL EXPERIMENT STATION

P.O. Box 11, Magoye. Tel.: 37026, Mazabuka. Cables: Agricola, Magoye

B. J. Coxe, B.Sc., Dip.Agr.(Cantab.), D.T.A.(Trin.), *Agronomist-in-Charge*

S. Hailey, B.Sc.Agr.(Leeds), *Agronomist*

H. J. C. Knight, B.Sc.Agr. (R'dg.), *Agronomist*

(d) AT MISAMFU REGIONAL EXPERIMENT STATION

P.O. Box 55, Kasama. Tel.: 289. Cables: Agricola, Kasama

C. E. Brook, B.Sc.(Lond.), Dip.Agr.(Cantab.), D.T.A.(Trin.), *Agronomist-in-Charge*

R. Hood, B.Sc.(R'dg.), *Pasture Research Officer*

ZAMBIA

- (e) AT MSEKERA REGIONAL EXPERIMENT STATION
P.O. Box 89, Fort Jameson. Tel.: 00231. Cables: Agricola, Msekera
A. J. Prior, B.Sc., N.D.A., Dip.Agr.(Cantab.), D.T.A., *Agronomist*
T. E. Davies, B.Sc.(Wales), *Agronomist*

2. Animal Research Section

MAZABUKA ANIMAL HUSBANDRY RESEARCH STATION
P.O. Box 50, Mazabuka. Tel.: 231. Cables: Agricola
D. K. R. Cruickshank, B.Sc.(Aberd.), Dip.Agr.(Cantab.), D.T.A., *Animal Husbandry Research Officer*

FOREST DEPARTMENT

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A. P. B. Hamilton, M.A., B.Sc., *Deputy Chief Conservator of Forests*
G. H. D. Williams, B.Sc., *Forest Economist*
- (a) AT DIVISION OF FOREST RESEARCH
P.O. Box 879, Kitwe. Tel.: 4285. Cables: Forests, Kitwe
E. N. G. Cooling, B.Sc., *Chief Forest Research Officer*
R. M. Bennet, B.A.(Oxon.), *Site Assessment Officer*
F. Endean, B.Sc., *Silviculturist*
D. B. Fanshawe, B.A.(Oxon.), *Principal Scientific Officer*
B. E. Jones, B.A.(Oxon.), *Biometrician*
- (b) AT DIVISION OF FOREST PRODUCTS
P.O. Box 879, Kitwe. Tel.: 4285. Cables: Forests, Kitwe
H. P. Mostyn, B.Sc., *Conservator (Forest Products)*
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VETERINARY AND TSETSE CONTROL DEPARTMENT

P.O. Box RW. 60, Lusaka. Tel.: 72667. Cables: Chevetof, Lusaka

Administrative

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P. J. Sheehy, M.R.C.V.S.(Dublin), *Deputy Director*
A. H. J. Colley, M.R.C.V.S., D.V.S.M., *Chief Veterinary Officer*

1. Veterinary Research Section

AT MAZABUKA VETERINARY RESEARCH STATION
P.O. Box 50, Mazabuka. Tel.: 202. Cables: Vetof, Mazabuka

Pathology Section
P. J. Davison, B.V.Sc.(Brist.), M.R.C.V.S., *Veterinary Officer*
Mrs. E. Hobday, M.R.C.V.S.(Lond.), *Veterinary Officer*

Parasitology Section
S. M. Silangwa, M.Sc.(Wis.), *Professional Officer*

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AT CHILANGA TSETSE CONTROL STATION
P.O. Box 1, Chilanga. Tel.: 229. Cables: Vetof, Chilanga
J. E. Clarke, B.Sc.(Brist.), *Professional Officer*

THE GAMBIA

DEPARTMENT OF AGRICULTURE

Headquarters: Cape St. Mary, P.O. Bathurst. Cables: Agric, Gambia

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Assistant Director: general crop husbandry, plant cytogenetics/breeding
M. I. Ashrif, M.B.E., B.Sc.Agr.(Pb.), Dip.Rur.Sc.(Edin.), Ph.D.(Edin.), *Senior Scientific Officer (Agronomist)*: agronomic research on groundnuts, upland cereals, fertilizer trials
J. R. Mulholland, B.Sc.Agr., D.T.A.(Trin.), *Agricultural Officer*: animal breeding and nutrition; pasture and forage crops
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- S. Y. Mehta, B.Sc., M.R.C.V.S., *Principal Veterinary Officer*: control of animal diseases

GUYANA

MINISTRY OF AGRICULTURE

P.O. Box 256, Georgetown. Tel.: 2491

Headquarters

- H. Paul, M.Sc., Ph.D. (Lond.), D.I.C., F.R.I.C., *Chief Agricultural Officer (ag.)*
A. V. Wan Ping, B.Sc., D.I.C.T.A., *Deputy Chief Agricultural Officer (ag.)*
B. W. Carter, D.I.C.T.A., *Principal Agricultural Officer (ag.)*: field and extension
H. Madramootoo, B.S.A., M.S., *Principal Agricultural Officer (ag.)*: development
Nityanand, B.Sc.Econ., Dip.Agr.Econ., *Agricultural Economist*

Central Agricultural Station

Mon Repos, East Coast, Demerara. Tel.: Mon Repos 223

- C. P. Kennard, M.Sc., D.I.C.T.A., *Principal Agricultural Officer (Research)*
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S. Bissessar, B.S., *Plant Pathologist*
D. I. Drayton, B.Sc., A.I.C.T.A., *Agricultural Officer*: livestock and grassland
V. Chin, B.Sc., *Agricultural Officer*: rice breeding and genetics

Ebini Research Station

Ebini, Berbice River

- S. P. Legg, M.A., B.Sc., *Research Officer*: animal breeding and pasture improvement

Veterinary and Animal Husbandry Division

Botanic Gardens, Georgetown. Tel.: 2491

- F. E. Mongul, D.V.M., M.R.C.V.S., D.T.V.M., *Principal Veterinary Officer*

BOTSWANA

DEPARTMENT OF AGRICULTURE

P.O. Box 10, Mahalapye. Tel.: 3. Cables: Doagric

VETERINARY LABORATORY

Ramathlabama, Private Bag, Lobatsi

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S. A. C. Jensen, Royal Danish Veterinary College

A. S. Medley, F.I.M.L.T.

P. Asquith, F.I.M.L.T.

TRYPANOSOMIASIS RESEARCH

Maun

H. Steding-Jessen, Royal Danish Veterinary College

AGRICULTURAL DEPARTMENT

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LESOTHO

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G. G. Platt, B.Sc.Agr. (Wales): *pastures*

G. D. Scott, B.Sc.Soil Cons. (Rand): *irrigation*

RHODESIA

A. MINISTRY OF AGRICULTURE

Private Bag 701, Causeway, Salisbury. Tel.: Salisbury 61131. Cables: Agric

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G. D. Cox, M.V.O., D.F.C., *Deputy Secretary (Economics and Marketing)*

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O. West, D.Sc. (Rand), *Chief Pasture Research Officer*: pasture research and ecology of vegetation

W. B. Cleghorn, B.Sc.Soil Con., *Senior Pasture Research Officer*: pasture research and ecology of vegetation

C. N. Hayter, F.I.P.A. (S.A.), *Chief Horticulturist*: sub-tropical and deciduous fruit and vegetables

J. C. Robinson, B.Sc.Agr., *Horticulturist*

(a) Branch of Botany (Government Herbarium and National Botanic Garden)

P.O. Box 8100, Causeway, Salisbury. Tel.: 25313. Cables: Systbot

H. Wild, B.Sc., A.R.C.S., D.I.C., Ph.D., *Chief Botanist*: systematic botany, phytogeography, "Flora Zambesiaca"

R. B. Drummond, B.Sc., *Senior Botanist*: systematic botany "Flora Zambesiaca"

M. O. Dale, B.Sc., *Economic Botanist*

B. K. Simon, B.Sc., *Systematic Botanist*: systematic botany, "Flora Zambesiaca"

(b) Branch of Chemistry and Soil Science

P.O. Box 8100, Causeway, Salisbury. Tel.: 29191. Cables: Agrichem

R. G. Thomas, B.Sc., F.R.I.C., *Chief of Chemistry and Soil Science*

J. G. Thompson, B.Sc., Ph.D., A.R.I.C., *Senior Soil Scientist*: pedology

A. A. du Toit, M.Sc., *Senior Agricultural Chemist*: soil fertility and plant nutrition

D. G. Bushnell, M.Sc., *Agricultural Chemist*: aflatoxins

R. J. Fenner, B.Sc.Hons., *Soil Chemist*: soil fertility

H. R. R. Metelerkamp, B.Sc.Agr., *Soil Physicist*: soil moisture relationships

E. Adamson, B.Sc., *Chemist*

B. A. Campbell, B.Sc.Agr., *Soil Chemist*

S. D. Coleman, B.Sc., Dip. R.Sc.(Edin.), *Pedologist*

J. Evans, B.Sc.Hons., Dip.Agr.Sc. (Cantab.), A.R.I.C., *Soil Chemist*

D. C. Legg, B.Sc.Hons., *Soil Chemist*

M. J. McGuigan, B.Sc.Hons., *Spectrographer*

C. P. M. Sweet, B.Sc.Hons., *Pedologist*

RHODESIA

(c) Dairy Branch

P.O. Box 8108, Causeway, Salisbury. Tel.: 22077. Cables: Agrisearch

G. M. Phillips, M.Sc.Agr., N.D.D. (Wales), *Chief Dairy Officer*

F. H. van Coller, B.Sc.Agr. (Pret.), *Senior Dairy Officer*

A. B. Edwards, B.Sc.Agr., N.D.D. (Wales), *Acting Regional Dairy Officer*

T. S. Leadley, B.Sc.Agr. (Nott.), Dip.Agr. (Cantab.), *Regional Officer (Dairy)*

(d) Plant Protection Branch

P.O. Box 8100, Causeway, Salisbury. Tel.: 29196. Cables: Phytosan

J. A. Whellan, B.Sc., *Chief of Plant Protection*: plant quarantine, Acridoidea

D. J. W. Rose, B.Sc., A.R.C.S., *Senior Entomologist*: pests of cereal crops

J. O. Whiteside, Ph.D., *Senior Plant Pathologist*: general pathology, deciduous fruit and citrus disease

C. C. Martin, *Senior Nematologist*

K. B. Hanssen, B.Sc.Agr., *Senior Seeds Officer*: seed testing and seed production

R. A. Bailey, B.Sc.Agr., *Plant Pathologist*: general plant diseases

B. Blair, B.Sc., *Entomologist*

Miss J. E. Bosch, B.Sc., *Entomologist*

R. G. Gaiger, B.Sc.Agr., *Seeds Officer*: seed production

M. Hardcastle, B.Sc., *Stored Food Products Entomologist*

G. W. Herd, B.Sc., *Plant Pathologist*: diseases of cereal crops and potatoes

C. J. Hodgson, B.Sc., *Entomologist (Eastern Districts)*: coccid bionomics and taxonomy

(e) Regional Research Stations

(i) GRASSLANDS RESEARCH STATION

Private Bag 701, Marandellas. Tel.: 2527/8. Cables: Grasslands

H. D. L. Corby, B.S.A. (Tor.), A.I.C.T.A. (Trin.), *Officer-in-Charge*: legume bacteriology

Agronomy Section

E. D. Alvord, M.Sc.(Pret.), *Senior Agronomist*: crops in rotation with dryland leys; maize and pulses; soil productivity of sandveld

M. F. Herring, B.Sc.Agr. (Natal), *Agronomist*: general crops and soil productivity of sandveld

Pasture Section

J. N. Clatworthy, B.Sc.Agr. (Natal), D.Phil. (Oxon.), *Pasture Officer*: natural veld; dryland pastures; irrigated forage crops

Animal Husbandry Section

D. P. Hanham, B.Sc. (Leeds), *Senior Animal Husbandry Officer*: nutrition of dairy and beef cattle and sheep on sandveld

J. L. Grant, B.Sc.Agr. (Natal), *Animal Husbandry Officer*: helminth parasites of sheep and cattle

Legume Bacteriology

W. P. L. Sandmann, D.T.A. (Deventer), *Bacteriologist*

(ii) HENDERSON RESEARCH STATION

Private Bag 4, Mazoe. Tel.: Mazoe 481. Cables: Agrizoe

R. C. Elliott, B.Sc.Agr. (Pret.), Ph.D. (Lond.), *Officer-in-Charge*: ruminant nutrition

Agronomy Section

P. E. L. Thomas, B.Sc.Agr. (Pret.), *Senior Agronomist*: crop and weed research

P. V. M. Richards, B.Sc.Agr. (R'dg.), *Agronomist*: coarse fibre crops

G. S. Laver, B.Sc.Agr. (Natal), *Horticulturist*

Animal Husbandry Section

W. M. O'Donovan, B.Sc.Agr. (Pret.), *Animal Husbandry Officer*: ruminant nutrition

W. D. C. Reed, B.Sc.Agr. (Natal), *Biochemist*

Pasture Section

M. G. W. Rodel, M.Sc.Agr. (Natal), *Senior Pasture Officer*: agrostology

P. F. L. Mills, B.Sc.Agr. (Natal), *Pasture Officer*: agrostology

Fisheries Section

M. I. van der Lingen, B.Sc.Hons. (Natal), *Senior Fisheries Officer*: fisheries biology

Miss E. A. Holl, B.Sc.Hons. (Rhodes), *Fisheries Officer*

(iii) MAKOHOLI EXPERIMENT STATION

Private Bag 9182, Fort Victoria. Tel.: 317-25. Cables: Makoholi

H. K. Ward, B.Agr.Sc. (N.Z.), M.S. (Minn.), *Officer-in-Charge*: beef cattle selection and nutrition

(iv) MATOPOS RESEARCH STATION

Private Bag K 19, Bulawayo. Tel.: Matopos 2 or 18. Cables: Matagric

D. L. Barnes, M.Sc., *Officer-in-Charge*: pastures

Agronomy Section

(Culture and selection of annual grain and fodder crops, especially sorghums, crop ecology and moisture relations of crops.)

R. N. Graham, B.Sc., *Senior Agronomist*

K. W. Sanderson, B.Sc., *Agronomist*

Animal Husbandry Section

(Effect of genotype and nutrition on the productivity of ranch cattle and haired sheep mineral nutrition of cattle, dentition in relation to breeds of cattle and nutrition, milk production costs, vealer production.)

J. D. G. Steenkamp, B.Sc.Agr., *Senior Animal Husbandry Officer*

P. le Roux, M.Sc.Agr., *Animal Husbandry Officer*

Pasture Section

(Management, improvement and ecology of the natural grazings, tree and coppice control.)

T. C. D. Kennan, B.Sc.Agr., *Senior Pasture Officer*

R. P. Denny, B.Sc.Agr., *Pasture Officer*

Sub-Stations :

Nyamandhlovu Experiment Station (Pastures)

P.O. Box 19, Nyamandhlovu. Tel.: 0-1903

J. S. H. Steyn, *Technical Officer*

Tjolotjo Experiment Station (Cattle breeding)

P.O. Tjolotjo. Tel.: Nyamdhlovu 0-1622

J. W. I. Brownlee, Dip.Agr., *Technical Officer*

Tuli Experiment Station (Cattle breeding)

P.O. Box 126, Gwanda. Tel.: Gwanda 0-0511

L. V. A. Harvey, *Technical Officer*

(f) **Specialist Research Stations**

(i) CHIPINGA EXPERIMENTAL STATION (Coffee)

P.O. Box 61, Chipinga. Tel.: 0-0930

J. A. Taylor, B.Sc. (R'dg.), *Horticulturist*

RHODESIA

- (ii) GATOOMA RESEARCH STATION (Cotton)
P.O. Box 396, Gatooma. Tel.: 2210

A. H. McKinstry, D.I.C.T.A. (Trin.), *Officer-in-Charge*
F. E. M. Gillham, B.Sc. (Stell.), Ph.D. (N.C.), *Senior Cotton Breeder*
W. J. Morris, B.Sc. (Natal), *Agronomist*

- (iii) LOWVELD IRRIGATION STATIONS

Chiredzi Research Station

P.O. Box 97, Chiredzi

K. E. Cackett, B.Sc.Agr. (Natal), *Senior Research Officer*

Chisumbanje Experiment Station

P. Bag 7340C, Umtali. Tel.: Radio Zee 21

A. J. Barry, *Technical Officer*

Sabi Valley Experiment Station

P. Bag 7395C, Umtali. Tel.: Chipinga 0-3640. Cables: Sabex, Umtali

W. H. Williams, M.A., B.Sc. (Aberd.), D.I.C., *Officer-in-Charge: agronomy of irrigated crops*

P. McGugan, B.Sc.Agr. (Natal), *Soil Scientist: soil physical problems; water requirements of crops*

- (iv) RHODES INYANGA EXPERIMENT STATION (Deciduous Fruit)

Private Bag 8044 Rusape. Tel.: Juliasdale 0-1202

C. B. Payne, B.Sc.Hort. (Nott.), *Horticulturist: pomology*

- (v) SALISBURY RESEARCH STATION (Plant Breeding and Agronomy)

P.O. Box 8100, Causeway, Salisbury. Tel.: 29192

A. G. H. Rattray, B.A.Agr. (Cantab.), *Officer-in-Charge: maize breeding*

T. De Carvalho, Agr.Eng., I.S.A. (Lisbon), *Potato Breeder*

O. J. Olesen, M.Sc.Agr. (Copen.), *Wheat Breeder*

J. R. Tattersfield, B.Sc.Agr., Dip.Agr., *Legume Breeder*

I. B. Edwards, B.Sc.Agr., *Agronomist: wheat*

Mrs. N. B. Fitt, B.Sc., *Agronomist: maize*

S. W. Nelson, B.Sc., *Maize Breeder*

(g) Agricultural Colleges

- (i) CHIBERO AGRICULTURAL COLLEGE

Private Bag 901, Norton. Tel.: Norton 230

J. W. Walsh, B.Agr. (Belf.), *Principal*

D. P. Hinton, B.Sc.Agr., N.D.Agr.Eng., *Senior Lecturer: agricultural engineering*

D. H. Holness, B.Sc.Agr., M.Sc., *Lecturer: animal husbandry*

D. T. Johnson, B.Sc.Agr., *Lecturer: field husbandry*

D. E. C. Johnson, B.Sc.Agr., *Lecturer: animal husbandry*

- (ii) GWEBI AGRICULTURAL COLLEGE

Private Bag 376B, Salisbury. Tel.: 32936. Cables: Gwebicol

H. R. L. Mundy, M.A. (Oxon.), B.Sc. (Rhodes), M.I.Biol., *Principal*

R. H. K. Hill, M.A., *Senior Lecturer: field husbandry*

W. J. Ascough, B.Sc.Agr., *Senior Lecturer: agricultural engineering*

G. C. Boyd-Clark, B.Sc.Agr., *Lecturer: animal husbandry*

R. E. Davenport, B.Sc.Agr., *Lecturer: field husbandry*

H. de Waal, B.Sc.Agr., *Lecturer: poultry nutrition*

2. DEPARTMENT OF CONSERVATION AND EXTENSION

P.O. Box 8117, Causeway, Salisbury. Tel.: 60271. Cables: Conex

- J. H. Louwrens, B.Sc.Agr., *Director*
 A. V. Oates, B.Sc.Soil Con., *Deputy Director*
 C. K. Thompson, B.Sc.Hons., *Assistant Director (Technical)*
 J. M. Cormack, B.Sc.Eng., *Conservation Engineer*
 M. A. Keech, B.Sc., M.Sc., *Chief Planning Officer*
 J. W. Hayward, B.Sc.Soil Con., *Chief Tobacco Officer*
 J. C. Harper, B.Sc.Soil Con., *Chief Agronomy Extension Officer*
 J. M. Watermeyer, *Chief Irrigation Officer*
 C. B. Metcalfe, B.Sc.Hons., F.A.I., *Land Tenure Officer*
 A. J. B. Hughes, B.Sc.Anthro., *Extension Research Officer*

3. ECONOMICS AND MARKETS BRANCH

Private Bag 701, Causeway, Salisbury. Tel.: 61131. Cables: Agric

- A. F. Hunt, B.Sc.Econ., *Chief Agricultural Economist*
 N. A. O'Connell, B.Sc.Agr., *Agricultural Economist: field cost surveys*

4. DEPARTMENT OF VETERINARY SERVICES

P.O. Box 8012, Causeway, Salisbury. Tel.: 22558/23090. Cables: Veteran

- T. Lees May, D.A.P. & E. (Lond.), M.R.C.V.S., *Director*
 J. M. Williamson, B.Sc., M.R.C.V.S., *Assistant Director (Field)*

(a) Tsetse and Trypanosomiasis Branch

P.O. Box 8283, Causeway, Salisbury. Tel.: 27093/4. Cables: Tsetse

- G. F. Cockbill, B.Sc., Ph.D., *Assistant Director (Tsetse and Trypanosomiasis Control)*
 W. P. Boyt, B.V.Sc., M.R.C.V.S., *Chief Veterinary Officer (Trypanosomiasis): epidemiology and therapeutics of animal trypanosomiasis*
 T. J. Casewell, B.Sc., *Entomologist: glossina biology; use of insects in control measures*
 G. Davison, B.Sc., *Game Biologist: game/glossina relationships*
 D. F. Lovemore, M.Sc., *Chief Entomologist (Tsetse): ecology and control of glossina*
 P. MacKenzie, B.V.M.S., M.R.C.V.S., *Senior Veterinary Research Officer (Trypanosomiasis): immunology and therapeutics in cattle trypanosomiasis*
 A. D. Marks, B.Sc., *Entomologist: ecology of glossina*
 P. Napier Bax, M.A., *Senior Entomologist: ecology and control of glossina*
 R. D. Pilson, B.Sc., *Senior Research Entomologist (Tsetse): ecology of glossina; control techniques*
 A. G. Robertson, B.Sc., D.I.C., *Senior Entomologist: population studies; control techniques*
 G. A. Vale, B.A., *Entomologist: ecology of glossina*

(b) Veterinary Research Laboratory

P.O. Box 8108, Causeway, Salisbury. Tel.: 24669/24652. Cables: Vaccine

- G. J. Christie, B.Sc., M.R.C.V.S., D.V.S.M., *Assistant Director (Research): bovine infertility*
 J. B. Condry, M.R.C.V.S., D.T.V.M.: *wild life research*
 R. Clatworthy, B.V.Sc., *Diagnostic Officer*
 F. W. Huchzermeyer, D.V.M.: *poultry pathology*
 J. A. Lawrence, B.Sc., M.R.C.V.S., D.T.V.M.: *pathology*

RHODESIA

F. H. Manley, M.D.Vet., M.V.Sc., D.V.M., M.R.C.V.S.: bacteriology
B. A. Matson, B.V.Sc., Ph.D., D.A.P. & E. (Lond.): protozoology
A. Smith, B.Sc.: wild life research

B. MINISTRY OF TRANSPORT AND POWER DEPARTMENT OF METEOROLOGICAL SERVICES

P.O. Box 8066, Causeway, Salisbury. Tel.: 21055. Cables: Met

J. E. Stevens, B.Sc., *Director*

J. D. Torrance, B.Sc., *Assistant Director*

(a) Headquarters

P.O. Box 8066, Causeway, Salisbury

(All climatological applications and/or forecasting research.)

J. B. Hattle, B.Sc., *Officer-in-Charge, Consultant Services*

A. B. Law, B.Sc., *Consultant Services*

J. Kreft, M.Sc., *Officer-in-Charge, Central Forecast Office*

W. L. Kelly, B.Sc., *Central Forecast Office*

Miss S. Lineham, M.A., *Officer-in-Charge, Rainfall Section*

(b) Goetz Observatory

P.O. Box 562, Bulawayo

(Radiation and instrument research.)

C. B. Archer, B.Sc., *Officer-in-Charge*

C. MINISTRY OF WATER DEVELOPMENT

P.O. Box 8091, Causeway, Salisbury. Tel.: 60861. Cables: Irrighead

H. W. H. Wallis, B.Sc.Eng., A.M.I.C.E., M.Rhod.I.E., *Director of Water Development*

I. R. H. Shand, D.S.O., M.B.E., D.F.C., B.Sc.Eng., A.M.I.C.E., M.Rhod.I.E., *Deputy Secretary (Engineering)*

(a) Projects Branch

S. W. Loewenson, B.Sc.Eng., A.M.I.C.E., A.M.Rhod.I.E., *Projects/Planning Engineer*

(b) Designs Branch

R. M. Wild, B.Sc.Eng., A.M.I.C.E., *Designs Engineer*

(c) Hydrological Branch

W. G. Wannell, B.Sc.Eng., A.M.Rhod.I.E., *Hydrological Engineer*

D. MINISTRY OF MINES AND LANDS DEPARTMENT OF NATIONAL PARKS AND WILDLIFE MANAGEMENT

P.O. Box 8365, Causeway, Salisbury. Tel.: 22473. Cables: Parklife

J. N. Gibson, *Director*

J. L. Anderson, B.Sc., *Wild Life Biologist*

D. H. M. Cumming, B.Sc., *Wild Life Biologist*

J. G. Isterberg, B.A.Econ., B.Com., *Research Biologist*

F. J. R. Junor, B.Sc., *Fisheries Biologist*
 M. A. Kerr, B.Sc.Agr., *Wild Life Biologist*
 A. R. McGowan, B.A., *Research Biologist*

E. AGRICULTURAL RESEARCH COUNCIL OF CENTRAL AFRICA

P.O. Box 1068, Lusaka, Zambia

P.O. Box 3397, Salisbury. Cables: Agresco, Salisbury

(Research on development of the renewable natural resources of Central Africa, in support of the Government Research Staffs of Rhodesia, Zambia and Malawi.)

H. C. Pereira, B.Sc., Ph.D., D.Sc. (Lond.), *Director*: land-use hydrology and agricultural physics

(a) Biometrics

W. R. Mills, B.Sc. (Lond.), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.), *Head of Research Team*: agricultural biometrics

P. M. Burrows, B.Sc. (Manc.): genetical biometrics

N. H. Judge, B.Sc. (Nott.): biometrics, computer programming

(b) Hydrology

P. Wurzel, B.Sc. (Natal), *Head of Research Team*: groundwater geology

P. R. B. Ward, B.Sc. (Lond.): radioisotope physics

(c) Grain Legume Pathology

A.R.C. Laboratories. P.O. Box 215, Lilongwe, Malawi

R. W. Gibbons, B.Sc. (Dunelm), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.), *Head of Research Team*: genetics of *Arachis*

A. N. Adams, B.Sc. (Lond.): aphid ecology

Miss B. E. Bailey, B.Sc. (Natal): *Cercospora* on groundnuts

J. A. K. Farrell, B.Sc. (R'dg.): aphid vector of rosette virus

(d) Animal Productivity

A.R.C. Laboratories. P.O. Box 49, Chilanga, Zambia

C. J. Rose, B.Sc., Ph.D. (Rand), *Head of Research Team*: animal nutritionist

W. R. Carr, A.R.I.C.: hormone biochemistry and serology

D. H. Hale, B.Sc. (Lond.): reproductive physiology

P. T. C. Johnson, B.Sc. (Edin.), M.Sc. (Q'ld.): bovine nutrition

A. M. Stewart, B.Sc., M.Sc. (Natal): nutrition biochemistry

P. B. Symington, B.Sc. (Edin.), Ph.D. (Lond.): bovine reproductive physiology

(e) Soil Productivity

A.R.C. Laboratories. P.B. 757, Marandellas, Rhodesia

Miss P. M. Grant, B.Sc. (Cape T.), Ph.D., D.I.C. (Lond.), *Head of Research Team*: soil chemistry

E. W. Hughes, H.N.C.: soil chemistry

Mrs. O. M. Moerman, B.Sc. (Rhodes): soil microbiology

R. K. Roschnik, B.A., Ph.D. (Cantab.): soil chemistry

F. J. Whiteway, B.Sc. (Dunelm), M.Sc. (Nott.): soil microbiology

S. T. Willatt, B.Sc. (W.Aust.), M.Sc. (N.S.W.): soil physics

(f) Tsetse Fly Biology

C/o University College. P.B. 167H, Salisbury, Rhodesia

R. J. Phelps, B.Sc., M.Sc. (Natal), Ph.D. (Wis.), *Head of Research Team*: tsetse fly physiology

R. B. Borthwick, B.Sc. (Rhodes), M.Sc. (Rand): tsetse fly ecology

RHODESIA

G. J. W. Dean, B.Sc. (Lond.): tsetse fly radio-sterilization
Miss R. C. Ellis, B.Sc. (Cape T.): tsetse fly parasitology
P. J. Jackson, B.A. (Oxon.): tsetse fly biophysics

(g) Forest Genetics

A.R.C. Laboratories. P.O. Box 1210, Kitwe, Zambia
J. Burley, B.A. (Oxon.), M.Sc. (Yale), *Head of Research Team*: genetical improvement of pine species
T. F. Geary, B.Sc. (Rhode Is.), Ph.D. (Wis.): tree physiology
J. F. Morgan, B.Sc. (Stell.): wood technology
Mrs. J. Pattinson, B.Sc., D.I.C. (Lond.), M.Sc. (W.Ont.): wood-quality criteria

(h) Cotton Pest Research

A.R.C. Laboratories. P.O. Box 396, Gatooma, Rhodesia
J. P. Turnstall, B.Sc. (Lond.), A.R.C.S., Dip.Agr. (R'dg.), *Head of Research Team*: biological control of *Diparopsis*
C. B. Cottrell, B.Sc. (Rhodes), Ph.D. (Cantab.): diapause of *Diparopsis*
G. A. Matthews, B.Sc. (Lond.), A.R.C.S., F.R.E.S.: entomology of cotton pests
D. J. McKinley, B.Sc., M.Sc. (Lond.): entomology of cotton pests

(i) Bush Control

Pax House. P.O. Box 3397, Salisbury, Rhodesia
J. H. Wilson, B.Sc. (Natal), M.Sc. (Nott.): ecology

F. NATIONAL MUSEUMS OF RHODESIA

P.O. Box 8540, Causeway, Salisbury. Tel.: 61130
R. H. N. Smithers, O.B.E., B.Sc., F.Z.S., *Director*: vertebrate zoology and ecology

(a) National Museum, Bulawayo

P.O. Box 240, Bulawayo. Tel.: 2039
G. L. Guy, B.Sc., *Curator*: botany
G. F. T. Child, B.Sc., Ph.D.: vertebrate zoology and ecology
M. P. S. Irwin: systematic ornithology and ecology
E. C. G. Pinhey, D.Sc.: systematic entomology
C. C. Smith, B.Sc.: geology
C. D. Simpson, B.Sc.: vertebrate zoology
R. F. H. Summers, F.S.C., F.R.S. (S.A.): Iron Age archaeology prehistory

(b) Queen Victoria Museum

P.O. Box 8006, Causeway, Salisbury. Tel.: 24341
Vacant: *Curator*
Mrs. E. Goodall, M.B.E.: ethnography and prehistoric art
W. H. James: oology
A. Maar, D.Sc.: systematic ichthyology
M. A. Raath, B.Sc.: vertebrate zoology and palaeontology

(c) Umtali Museum

Victory Avenue, Umtali. Tel.: 3630
D. G. Broadley, M.Sc., *Curator*: systematic herpetology and ecology

G. PIG INDUSTRY BOARD

P.O. Box H.G. 297 Highlands, Salisbury. Tel.: 4608524. Cables: Pigboard
R. F. Johnson, *Director of Development*

H. RHODESIA FORESTRY COMMISSION

P.O. Box 8111, Causeway, Salisbury. Tel.: 26626. Cables: Forcom

J. S. Wilkins, B.Sc. (Edin.), *Director*

F. B. Armitage, B.Sc., M.A. (Oxon.), *Senior Conservator of Forests: management and research*

P. F. Banks, B.Sc. (Wales), *Conservator of Forests (Research)*

R. D. Barnes, B.A.Hons. (Oxon.), *Forest Officer (Research)*

C. K. Furness, B.Sc. (Wales), *Forest Officer (Research)*

I. SABI LIMPOPO AUTHORITY

P.O. Box 8113, Causeway, Salisbury. Tel.: 27238. Cables: Limpopo

(Planning authority for the exploitation, conservation and utilization of the water resources of the Sabi and Limpopo river basins.)

Hon. H. J. Quinton: *Chairman*

R. M. M. Cormack, M.B.E., B.Sc.Civ.Eng. (Glas.), A.M.I.C.E. (Lond.), A.M.S.A.C.E., A.M.R.I.E., *Chief Planning Officer*

H. R. Hack, M.B.E., *Senior Planning Officer*

W. D. Mills, B.Com. (Rhodes), *Senior Planning Officer*

L. Jaklitsch, Dr.Agr. (Vienna), *Planning Officer*

J. TOBACCO RESEARCH BOARD OF RHODESIA

P.O. Box 1909, Salisbury. Tel.: 50411. Cables: Tobres

I. McDonald, B.Sc. (S.A.), M.A. (Oxon.), Ph.D. (N.C.), A.R.I.C., *Director*

1. Kutsaga Research Station

P.O. Box 1909, Salisbury. Tel.: 50411. Cables: Tobres

(a) AGRICULTURAL ENGINEERING

J. A. F. Roberts, B.S.A.Agr.Eng. (Tor.), N.D.A., A.M.A.S.A.E., A.M.I.A.E., *Senior Agricultural Engineer*

D. W. H. Bates, M.I.Mar.E., *Agricultural Engineer*

(b) AGRONOMY

R. C. Salmon, B.Sc. (Cape T.), M.A. (Oxon.), Ph.D. (Lond.), A.R.I.C., *Soil Chemist/Senior Agronomist*

R. J. Haslam, B.Sc. (Rhodes), *Agronomist*

H. D. Papenfus, B.Sc.Agr. (Natal), *Agronomist*

B. W. Smeeton, B.Sc.Agr. (Natal), *Agronomist*

(c) CHEMISTRY

G. H. Wiltshire, M.A., Ph.D. (Cantab.), *Senior Chemist*

Miss L. S. Galante, B.Sc. (Lond.), *Chemist*

W. W. Ryding, B.Sc. (S.A.), M.Sc. (Rhodes), A.R.I.C., *Chemist*

E. R. Tillett, B.Sc.Agr. (Natal), *Soil Chemist*

(d) ENTOMOLOGY

J. B. B. Legge, B.Sc. (Dunelm), *Senior Entomologist*

Mrs. J. M. P. Palmer, B.Sc. (Lond.), *Entomologist*

M. J. P. Shaw, M.Sc.Agr. (Natal), *Entomologist*

(e) LIAISON

J. S. W. Ingham, B.Sc.Agr. (Natal), *Liaison Officer*

RHODESIA

(f) NEMATOLOGY

J. A. Shepherd, M.A., Dip.Agr. (Cantab.), D.I.C., *Senior Nematologist*
H. Ferris, B.Sc. (Lond.), *Nematologist*

(g) PLANT BREEDING

J. G. Raeber, Ing.Agr.(Zur.), M.Sc., Ph.D. (Iowa), *Senior Plant Breeder*
J. A. Godtschaik, B.Sc.Agr. (Dunelm), *Agronomist*
H. R. Hojby, M.Sc.Agr.(Copen.), *Plant Breeder*
M. A. Schweppenhauser, M.Sc., D.Sc. (Stell.), *Plant Breeder*

(h) PLANT PATHOLOGY

J. S. Cole, B.Sc. (Wales), Ph.D. (Lond.), D.I.C., M.I.Biol., *Senior Plant Pathologist/Research Co-ordinator*
L. F. Gates, B.A. (Cantab.), Ph.D. (Corn.), *Plant Pathologist*
W. F. T. Hartill, B.Sc., Ph.D. (Soton.), *Plant Pathologist*

(i) PLANT PHYSIOLOGY

A. G. Robertson, B.Sc. (Aberd.), *Senior Plant Physiologist*
H. Rostron, M.Sc.Agr.(Leeds), Dip.Agr.(Cantab.), D.T.A.(Trin.), *Plant Physiologist*

(j) STATISTICS

Mrs. I. Gill, M.Phil. (Krakow), *Senior Biometrician*

2. Trelawney Research Station

P.O. Trelawney. Tel.: Trelawney 0-1323

L. T. V. Cousins, B.Sc.Agr.(Natal), *Agronomist (Oriental) and Officer-in-Charge*
D. F. Lapham, B.Sc.Agr. (Natal), *Agronomist (Burley)*

K. UNIVERSITY COLLEGE OF RHODESIA

Private Bag 167H, Salisbury. Tel.: 36635. Cables: Unicoll

1. Department of Agriculture

A. G. Davis, B.S.A. (Tor.), M.Sc. (Wales), *Professor of Agriculture: management of lucerne, land utilization*
J. C. S. Allison, M.Sc.Agr. (Pret.), Ph.D. (Lond.), *Lecturer in Crop Science: growth studies on maize*
J. L. Manson, M.Sc.Agr.Eng. (Dunelm), *Lecturer in Agricultural Engineering: maize maturation studies*
Mrs. M. Milwid, B.Sc. (Cape T.), Ph.D. (Lond.), *Rockefeller Research Worker: bacterial studies of the rumen*
J. Oliver, B.Sc. (Dunelm), Ph.D. (R'dg.), *Senior Lecturer in Animal Science: ruminant nutrition*
C. J. Smith, B.Sc. (Dunelm), *Rockefeller Research Fellow: pasture ecology*
A. J. Smith, B.Sc., M.Sc. (Nott.), *Lecturer in Animal Science: environmental and nutritional studies on poultry*
J. H. Topps, B.Sc., Ph.D. (Lond.), *Lecturer in Animal Nutrition: ruminant nutrition*
J. P. Watson, B.A.Agr., M.A., B.Sc. (Oxon.), Ph.D. (Lond.), *Lecturer in Pedology and Soil Science: soil formation*

2. Department of Biological Sciences

(a) PLANT SCIENCE

A. R. A. Noel, B.Sc., Ph.D. (Lond), *Lecturer: experimental plant anatomy*
D. S. Mitchell, B.Sc.Hons. (Cape T.), *Lecturer: autecology of *Salvinia* and shore ecology of Lake Kariba*

- Miss J. Meiklejohn, B.Sc., Ph.D. (St. And.), *Senior Research Fellow*: soil microbiology, especially of the nitrogen cycle
R. Truen, B.Sc.Agr. (Natal), *Research Fellow*: water relations and photosynthetic efficiency of tobacco
B. S. Purchase, B.Sc.Agr. (Natal), *Lecturer*: soil microbiology

(b) ANIMAL SCIENCE

- E. Bursell, Ph.D. (Cantab.), D.Sc. (Natal), *Professor*: physiology of tsetse flies
J. S. Weir, B.Sc., Ph.D. (Glas.), *Lecturer*: terrestrial ecology
H. E. Paterson, B.Sc.Hons. (Rand), *Lecturer*: population genetics
P. E. Hulley, M.Sc. (Rhodes), *Lecturer*: cytogenetics of mosquitoes
P. E. Langley, B.Sc., Ph.D. (Nott.), *Research Fellow*: physiology of tsetse flies
J. P. Loveridge, B.Sc. (Lond.), *Research Fellow*: waterbalance of locusts
P. Jarman, M.A. (Oxon.), *Research Fellow*: terrestrial ecology with special reference to ungulates
A. J. McLachlan, B.Sc.Hons. (Rand), *Research Fellow*: biology of chironomids and benthic fauna of Lake Kariba

STATE OF BRUNEI

AGRICULTURAL DEPARTMENT

Brunei Town, State of Brunei. Tel.: 454. Cables: Agriculture, Brunei
Hamidoon bin Awang Damit, P.O.A.S., *State Agricultural Officer*

Agronomic Investigations

W. G. Agne, B.Sc.Agr., *Acting Agricultural Officer*
E. A. Hilario, B.Sc.Agr., *Senior Agricultural Assistant*

FOREST DEPARTMENT

Brunei Town, State of Brunei. Tel.: 450
C. G. Merton, *State Forest Officer*

EAST AFRICAN COMMON SERVICES ORGANIZATION

A. EAST AFRICAN AGRICULTURE AND FORESTRY RESEARCH ORGANIZATION

P.O. Box 30148, Nairobi, Kenya. Tel.: Kikuyu 227/8/9, 274. Cables:
Agfororg, Nairobi, Kenya

- O. Starnes, Ph.D., *Director* (Associate Dean, Rutgers University—seconded on Rockefeller assignment)
T. Jones, B.Sc., A.R.C.S., F.I.W.Sc., *Deputy Director/Forest Entomologist*: East African survey, tree-borers and timber pests
M. Dagg, B.Sc., Ph.D., *Physicist*: irrigation and crop water use
J. R. Blackie, B.Sc., M.Sc., *Physicist*: agricultural meteorology
T. Woodhead, B.Sc., Ph.D., A.Inst.P., *Physicist*: agricultural meteorology
P. H. Hosegood, *Soil Physicist*: effect of method of cultivation on soil surface structure
J. B. D. Robinson, B.Sc., F.R.I.C., F.I.Biol., M.R.S.H., *Soil Chemist*: soil and plant chemical analyses
D. J. Tubb, *Spectrochemist*: soil and plant chemical analyses
H. Doggett, M.A., A.I.C.T.A., *Plant Breeder*: sorghum breeding and genetics
B. N. Majisu, B.Sc., Ph.D., *Plant Breeder*: sorghum breeding and genetics
W. G. Dyson, M.A., *Tree Breeder*: breeding exotic pines and Cupressaceae
D. N. Paterson, B.Sc., *Tree Breeder*: breeding exotic pines and Cupressaceae
M. D. Gwynne, B.Sc., D.Phil., *Plant Physiologist*: root systems and water requirements of plants
Miss F. M. L. Sheffield, D.Sc., *Plant Virologist*: virus diseases of plants; plant quarantine
H. H. Storey, C.M.G., M.A., Ph.D., F.R.S., *Plant Pathologist*: rust diseases of maize *Puccinia polysora*, resistance in maize to streak disease virus
I. A. S. Gibson, Ph.D., *Forest Pathologist*: *Dothistroma pini* and *Stereum sanguinolantum*
M. H. Ivory, B.Sc., *Forest Pathologist*: *Dothistroma pini* and *Stereum sanguinolantum*
J. B. Gillett, M.A., *Botanist*, in charge of the East African Herbarium: plant systematics

EAST AFRICAN COMMON SERVICES ORGANIZATION

- P. J. Greenway, O.B.E., F.L.S., D.Sc., *Botanist*: plant systematics
D. G. Wood, B.Sc., *Botanist*: plant systematics
R. L. P. Wolff Schoemaker, M.Sc., *Nematologist*: plant parasitic nematodes
E. S. Brown, B.A., *Entomologist*: studies on ecology and biology of *Spodoptera* species
R. M. Bredon, B.Sc., M.Sc.: animal husbandry, genetic improvement
H. P. Ledger, N.D.D.: animal husbandry, carcass analysis
S. D. Minto, M.I.Agr.E., E. A. Agricultural Machinery Co-ordinating Unit: co-ordinating research, testing and machinery trials
G. H. Freeman, M.A., Dip.Stat., Ph.D., *Statistician*: agricultural statistics

B. EAST AFRICAN TROPICAL PESTICIDES RESEARCH INSTITUTE

P.O. Box 3024, Arusha, Tanzania. Tel.: Arusha 2121. Cables: Ciru

- K. S. Hocking, A.R.C.S., B.Sc. (Lond.), M.I.Biol., *Director*: organization and direction of research
A. Smith, D.Sc., Ph.D. (Birm.), *Deputy Director*: problems in the control of mosquitoes with insecticides
W. R. Bransby-Williams, B.A. (Cantab.), D.A.P.&E., *Entomologist*: chemosterilants and larvicides for mosquitoes
J. Foster, B.Sc., Ph.D. (Wales), *Scientific Officer, Botanist*: uses of herbicides in the tropics
D. Hocking, B.Sc. (Alta.), M.Sc. (St.And.), Ph.D. (Dunelm), *Plant Pathologist*: problems in control of fungus diseases of coffee and of pine-trees
N. S. Irving, B.Sc., *Scientific Officer, Entomologist*: entomological problems in control of tsetse flies with insecticides
C. W. Lee, B.Sc. (Lond.), *Principal Scientific Officer, Physicist*: physical problems of spraying in the tropics
M. E. A. Materu, B.Sc. (Lond.), M.Sc. (Mich.), *Entomologist*: problems in control of sisal weevil and pests of seed beans
R. H. Parish, B.Sc. (Lond.), *Senior Scientific Officer, Entomologist*: problems in control of pests of cotton, coffee and beans
P. O. Park, B.Sc. (Wales), F.R.I.C., *Principal Scientific Officer, Chemist*: chemical problems in application of pesticides in the tropics
H. C. M. Parr, B.Sc. (Brist.), *Principal Scientific Officer, Entomologist*: biting fly research
D. J. Webley, B.Sc., Ph.D. (Brist.), A.R.I.C., *Senior Scientific Officer, Chemist*: chemical problems in application of pesticides in the tropics; particularly, detection of traces of pesticides

C. EAST AFRICAN TRYPANOSOMIASIS RESEARCH ORGANIZATION

P.O. Box 96, Tororo, Uganda. Tel.: Tororo 355/356. Cables: Eatro, Tororo

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Department of Agriculture and Irrigation

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Vacant: *Deputy Director*

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Stations and Research Division

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Nausori. Tel.: 204

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Soils Chemist

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Lami, Suva. Tel.: 26169

Miss B. M. Coles, B.Sc. (Br.Col.), *Veterinary Pathologist*

BOTANY

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J. W. Parham, B.Sc. (N.Z.), *Botanist*

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R. N. Bryden, B.Sc.Agr. (Edin.), D.T.A. (Trin.), *Agricultural Officer-in-Charge:
coconut improvement*

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 I. E. Walker, B.Sc.Vet.Med. (Lond.), M.R.C.V.S., *Veterinary Officer: general livestock disease*

Fisheries

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 A. J. Bruce, B.Sc., M.B., B.S. (Lond.), *Research Officer: decapod carcinology (especially ecology and systematics)*
 W. L. Chan, B.Sc. (Taiwan), M.A. (Stanford), *Research Officer: systematic ichthyology*
 D. Eggleston, B.Sc., Ph.D. (Liv.), *Research Officer: long-line fishery; biology and ecology of *Nemipterus virgatus*, *N. bathibius*, *N. japonicus*, and *Branchiostegus japonicus*; marine fouling organisms*
 R. J. G. Lester, B.Sc. (Lond.), *Research Officer: trawling; biology and ecology of *Saurida tumbil*, *Priacanthus tayenus*, *P. macracanthus*, *Taius tumifrons*, *Lutianus sanguineus**
 P. J. Gaiger, B.Sc. (Leeds), *Research Officer: trawl fisheries, commercial fleet statistics, and fish population dynamics*
 G. R. Williamson, B.Sc., Ph.D. (Lond.), *Research Officer: studies of fish growth; cephalopods*
 R. A. Morton Maskell, B.A. (Oxon.), *Research Officer: edible and pearl oyster culture*
 C. Y. Chu, B.Econ. (Senshu), *Assistant Research Officer: fisheries economics*
 K. M. Chan, B.Sc., Dip.Ed. (H.K.), *Assistant Research Officer: physical and chemical oceanography*

Forestry

- P. A. Daley, B.Sc.For. (Wales), *Forestry Officer: afforestation and silviculture*
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Department of Agriculture

Friars Hill, Antigua, W. I. Tel.: St. John's 27

H. A. L. Francis, D.I.C.T.A., *Director of Agriculture*

C. T. Cave, D.I.C.T.A., B.Sc., *Agricultural Officer, Research*

Vacant: *Veterinary Officer*

B. Baynes, D.I.C.T.A., *Extension Officer*

FISHERIES DIVISION

Tel.: St. John's 772

R. Camacho, *Fisheries Officer*

CENTRAL COTTON STATION

Friar's Hill. Tel.: 418

H. W. Payne, B.S.A., M.Sc., *Leeward Islands Agronomist*

S. L. Henry, *Cotton Officer*

MONTSERRAT

Department of Agriculture

Grove Botanic Station, P.O. Box 27, Plymouth. Tel.: 23. Cables: Agriculture

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N. M. W. Meade, D.E.C.F.I.: bananas; crop spraying

F. P. Smyth, N.D.A.: pasture research

MAURITIUS

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A. Darne, F.R.C.V.S., *Deputy Director*

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B. D. Roy, B.Sc.Agr. (Wales), Dip.Agr. (Maur.), *Senior Agricultural Officer: in charge of division*

J. Seeyave, A.I.C.T.A., Dip.Agr. (Maur.), *Agronomist: foodcrops*

T. M. Narain, B.Sc.Agr. (R'dg.), *Agronomist: foodcrops*

L. Suzor, Dip.Agr. (Maur.), *Agronomist: tobacco, foodcrops, irrigation*

Extension Services Division

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L. R. Brunet, B.Sc.Agr. (R'dg.), *Agronomist: foodcrops, sugarcane cultivation, insect pests attacking sugarcane*

Tea Division

D. N. Andrews, *Senior Agricultural Officer: in charge of division*

L. Moorlee, Dip.Agr. (Maur.), *Agronomist: tea cultivation in the fields and in the laboratory*

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L. Li Pi Shan, B.Sc.Eng. (Sask.), *Agricultural Engineer*: farm mechanization and field engineering

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S. Belcourt, B.Sc. (Wales), Dip.Agr.Sc. (Wales), Dip.Agr. (Maur.), *Chemist*: agricultural and chemical investigations

Entomology Division

J. E. A. Orian, Ph.D. (Lond.), B.Sc. (St.And.), F.R.E.S., F.Z.S., Dip.Agr. (Maur.), R.A.C. (Maur.), *Entomologist*: insect pests attacking economic crops other than sugarcane, domestic and farm animals

Plant Pathology Division

L. Orieux, B.Sc. (Lond.), D.I.C., *Plant Pathologist*: diseases on crops other than sugarcane

Division of Veterinary Services

J. U. D. Shuja, M.R.C.V.S., *Senior Veterinary Officer*: animal diseases; artificial insemination; tuberculin testing, meat inspection

D. A. MacPherson, B.Sc., M.R.C.V.S., *Veterinary Officer*: veterinary laboratory work

J. A. C. Delaitre, B.Agr.An.Husb. (N.Z.), *Animal Husbandry Officer*: livestock breeding and nutrition

College of Agriculture

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R. Burrenchobay, B.Sc. (Edin.), *Lecturer*: agricultural chemistry

S. Moutia, D.Phil. (G.U.), B.Sc.Hort. (Lond.), Dip.Agr.Econ. (Oxon.), Dip.Agr. (Maur.), F.R.H.S., *Lecturer*: agriculture

D. R. Beeraj, B.Sc. (Wales), *Lecturer*: biology

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Sugar Industry Research Institute

Tel.: 4-1061. Cables: Siri, Mauritius

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R. Antoine, B.Sc., A.R.C.S., Dip.Agr.Sc. (Cantab.), Dip.Agr. (Maur.), *Chief Pathologist*: breeding and selection of cane varieties; sugarcane diseases

J. D. de R. de Saint Antoine, B.S., Dip.Agr. (Maur.), *Chief Sugar Technologist*: processing and by-products of sugarcane

P. Halais, Dip.Agr. (Maur.), *Consulting Agronomist*: nutrition of sugarcane by tissue analysis; climatology

J. M. Hardy, Dip.Agr. (Maur.), *Senior Field Officer*: irrigation

J. A. Lalouette, Dip.Agr. (Maur.), *Biometrician*: biometrics of cane breeding and selection

F. Le Guen, B.Sc. (Lond.), D.N.C.L., *Instrument Engineer*: control engineering in sugar factories

DEPENDENT TERRITORIES

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C. Mongelard, M.Sc., D.I.C., *Plant Physiologist*: weed control; plant/water/soil relationship
L. P. Noel, Dip.Agr. (Maur.), *Plant Breeder*: breeding and selection of cane varieties
M. Perombelon, M.Sc. (Aberd.), Dip.Agr. (Maur.), *Geneticist*: flowering of sugarcane; cytology
E. Piat, B.Sc.Eng. (Glas.), Dip.Agr. (Maur.), *Associate Sugar Technologist*: engineering aspect of cane sugar production
C. Ricaud, Ph.D. (Lond.), D.I.C., *Pathologist*: root disease; bacterial diseases of sugarcane
G. Rouillard, Dip.Agr. (Maur.), *Chief Agriculturist*: agricultural methods in sugarcane production
E. C. Vignes, M.Sc. (Lond.) A.R.I.C., Dip.Agr. (Maur.), *Chemist*: chemical aspects of cane sugar production and by-products
J. R. Williams, M.Sc. (Brist.), D.I.C., *Chief Entomologist*: sugarcane entomology and nematology
Y. Wong You Cheong, B.Sc., B.Agr. (Q.U.B.), A.R.I.C., *Chemist*: soils and fertilizers; nutrition of sugarcane

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Curepipe

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P.O. Box G.7, Honiara. Tel.: 260. Cables: Agricola

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A. D. S. Duff, B.Sc.Agr., Dip.Agr.Sc., D.T.A.: coconut breeding

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COCOA AGRONOMY SECTION

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RICE AGRONOMY SECTION

Honiara

J. G. H. Holsheimer, Dip.Agr.: general rice and soya bean agronomy

ENTOMOLOGY SECTION

Honiara

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M. J. MacQuillan, B.Sc., B.Agr.: control of rice and soya bean pests

LAND USE SECTION

Honiara

B. J. Leach, B.Sc.Agr., D.T.A.: soil survey, land use capability surveys

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J. Leggate, B.A.: silvicultural research

C. C. Bengough, B.Sc., Dip.For.: timber utilization research

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Malkerns Research Station

P.O. Box 4, Malkerns. Tel.: 17. Cables: Agrisearch

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P. G. C. Dodson, B.Sc., *Horticulture Research Officer*: citrus, pineapple and horticultural crops

J. D. Gibbs, *Agronomist (Crops)*: field crop husbandry

P. Jackson, B.Sc., Dip.Agr.Sc., D.T.A., *Chemist*

R. C. H. Sweeney, M.I.Biol., F.R.E.S., *Research Entomologist*

D. E. Latham, B.Sc., D.T.A., *Agronomist (Soil Fertility)*: soil fertility and crop nutrition

Lowveld Experiment Station

P.O. Box 53, Big Bend. Tel.: 130

J. D. Lea, M.Sc., *Senior Research Officer*: irrigation studies, sugarcane, cotton, citrus

Under Headquarters

G. F. M. Murdoch, M.A., *Soil Surveyor*

Prof. R. H. Compton, M.A., F.R.S.S.Af., Hon.F.R.H.S., *Botanical Surveyor*

WINDWARD ISLANDS

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St. George's, Grenada

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Department of Agriculture

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Windward Islands Banana Association

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W. de Courcey Jeffers, B.Sc., M.Sc., *Research Officer*, C.P.E. Station

C. J. Williams, D.I.C.T.A., *Banana Research Officer*

COTTON RESEARCH CORPORATION

(previously, Empire Cotton Growing Corporation)

12 Chantrey House, Eccleston Street, London, S.W.1. Tel.: Sloane 4239
Cables: Cottcorp, London

D. F. Ruston, B.Sc., N.D.A., Dip.Agr., A.I.C.T.A., *Director*
J. M. Munro, B.Sc., *General Cotton Adviser*
K. R. M. Anthony, B.Sc., A.I.C.T.A., *Cotton Specialist*
M. F. Rose, M.A., A.I.C.T.A., *Visiting Cotton Adviser, Swaziland and Botswana**

Uganda

C. R. C. COTTON RESEARCH STATION, NAMULONGE
P.O. Box 884, Kampala. Tel.: Kasangati 3. Cables: Cotrest, Kampala
M. H. Arnold, M.A., *Director*: cotton breeding; resistance to bacterial blight
J. M. F. Church, B.Sc.: cotton breeding and agronomy
S. J. Brown, B.Sc., Dip.Agr.Sc.: plant pathology; host-parasite relationships
A. B. Hearn, B.Sc., Dip.Agr., D.T.A.: plant physiology; growth in cotton
E. Jones, M.Sc.: soil science; nutrient cycles in grass arable rotations
D. A. Rijks, M.Sc.: microclimatology; crop water use
G. O. Stride, B.Sc., Ph.D.: entomology; insect-host plant relationships

DEPARTMENT OF AGRICULTURE SERERE RESEARCH STATION

Soroti. Tel.: Soroti 14. Cables: Experiment, Soroti
B. E. Costelloe, B.Sc.: cotton breeding and agronomy
T. J. Riggs, B.Sc.: cotton breeding and agronomy
W. H. de Silva, B.Sc., Ph.D.: cotton agronomy

Kenya

DEPARTMENT OF AGRICULTURE NATIONAL AGRICULTURAL LABORATORIES
P.O. Box 30028, Nairobi. Tel.: Nairobi 64211. Cables: Minag, Nairobi
J. E. Saunt, M.Sc.: cotton agronomy

DEPARTMENT OF AGRICULTURE COTTON RESEARCH STATION

P.O. Kibos. Tel.: Kisumu 338. Cables: Kencot, Kibos
T. Bradley, B.Sc.: cotton breeding and agronomy
J. H. Brettell, B.Sc., Ph.D.: cotton pest biology and control

Tanzania

MINISTRY OF AGRICULTURE, FORESTS AND WILDLIFE WESTERN RESEARCH CENTRE
Ukiriguru, Mwanza. Tel.: Fela 2. Cables: Scientific, Mwanza

P. H. Le Mare, B.Sc., *Senior Officer, Tanzania*: soil science; cotton nutrition
J. R. Spence, A.I.C.T.A., D.I.C.T.A.: cotton breeding and agronomy
J. B. Smithson, B.Sc., Ph.D.: cotton breeding
W. Reed, B.Sc.: biology, ecology and control of cotton pests
A. G. P. Brown, B.Sc., Ph.D.: plant pathology; resistance to *Fusarium* wilt and nematodes

MINISTRY OF AGRICULTURE, FORESTS AND WILDLIFE CENTRAL RESEARCH CENTRE
Ilonga, Kilosa. Tel.: Kilosa 49. Cables: Scientific, Kilosa

F. E. Tollervey, B.Sc.: cotton breeding and agronomy
J. S. Watson, B.Sc.: cotton breeding and agronomy

*In conjunction with Ministry of Overseas Development.

COTTON RESEARCH CORPORATION

Swaziland

DEPARTMENT OF AGRICULTURE LOWVELD EXPERIMENT STATION

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M. E. Cornish-Bowden, B.A.: cotton breeding and agronomy

Northern Nigeria

INSTITUTE FOR AGRICULTURAL RESEARCH, AHMADU BELLO UNIVERSITY

Samaru, P.M.B. 1044, Zaria. Tel.: Samaru 251. Cables: Agrisearch, Zaria

M. A. Choyce, B.Sc., D.I.C., *Senior Officer, Nigeria*: entomology

R. C. Faulkner, B.Sc.: cotton breeding; hybridization and selection

G. B. Jones, B.Sc.: cotton breeding; hybridization and selection

K. J. Brown, B.Sc.: plant physiology; radiation measurements in cotton crop, boll nutrition

M. Dransfield, B.Sc., Ph.D.: plant pathology; seed dressings against bacterial blight

D. J. de B. Lyon, B.Sc.: entomology; chemical control of pests, mirid population studies

AGRICULTURAL RESEARCH STATION, INSTITUTE FOR AGRICULTURAL RESEARCH, AHMADU BELLO UNIVERSITY, Mokwa, near Jebba, Niger Province

J. L. Palmer, B.Sc.: general cotton growing problems

Western Nigeria

MINISTRY OF AGRICULTURE AND NATURAL RESOURCES, AGRICULTURAL RESEARCH DIVISION, Moor Plantation, P.M.B. 5029, Ibadan

Tel.: Ibadan 23621 (PBX). Cables: Caro, Moor Plantation, Ibadan

B. J. S. Lee, B.Sc.: cotton breeding and agronomy*

J. A. Hayward, M.Sc.: entomology; incidence and control of major pests*

Sudan

DEPARTMENT OF AGRICULTURE GEZIRA AGRICULTURAL RESEARCH STATION, Wad Medani

Tel.: Wad Medani 431. Cables: Research, Wad Medani

L. C. Hughes, B.Sc., *Senior Officer, Sudan*: cotton breeding; long staple varieties

N. L. Innes, B.Sc.: cotton breeding; bacterial blight resistance and short staple varieties

H. G. Farbrother, B.Sc.: water relations, fruiting habit

W. D. Thomas, B.Sc.: weed control

DEPARTMENT OF AGRICULTURE COTTON BREEDING SECTION, Shambat, Khartoum-North

Tel.: Khartoum 31660. Cables: Buzur, Khartoum

J. H. Saunders, B.Sc.: cotton genetics; wild species

Malawi

DEPARTMENT OF AGRICULTURE MAKANGA EXPERIMENTAL STATION

P.O. Chiromo. Tel.: Chiromo 19. Cables: Distagric, Chiromo

R. K. Gausi, B.Sc.: cotton breeding and agronomy (on secondment from Malawi Government)

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COTTON RESEARCH CORPORATION

Zambia

MINISTRY OF AGRICULTURE MOUNT MAKULU RESEARCH STATION

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N. R. Fadda, B.A., B.Sc., Ph.D., A.R.C.S., D.I.C.: cotton breeding and agronomy

Australia

C.S.I.R.O. IRRIGATION RESEARCH STATION

Griffith 5S., New South Wales. Tel.: Griffith 1701-4. Cables: Coresearch, Griffith

A. Low, B.Sc.: cotton breeding and agronomy (on secondment to C.S.I.R.O.)

THE BRITISH MIDDLE EAST DEVELOPMENT DIVISION

c/o The British Embassy, Beirut

The Development Division includes a number of specialist officers whose services in their respective spheres are available in a consultative and advisory capacity to the government of any Middle East country which may desire to avail of them.

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J. C. Eyre, C.B.E., B.Sc.Agr., D.I.C., *Adviser on Agriculture*
P. Durran, M.R.C.V.S., *Veterinary and Animal Husbandry Adviser*
D. F. Davidson, O.B.E., B.Sc.F., *Adviser on Forestry and Soil Conservation*
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B. M. U. Bennell, A.C.G.I., B.Sc., D.I.C., M.I.C.E., *Engineering and Industrial Adviser*
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R. J. Line, B.A., M.A., R.I.A., *Economist and Statistical Adviser*
G. Mollison, B.Sc.Eng., A.M.I.Mech.E., A.M.I.M.I., *Adviser on Technical Education*

REPUBLIC OF IRELAND

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J. J. Brady, M.Agr.Sc., *Chief Inspector: plant breeding*
M. G. Hynes, M.R.C.V.S., *Director of Veterinary Services*
C. Devlin, B.Agr.Sc.: plant breeding
D. P. Feely, B.Agr.Sc.: seed propagation and certification (herbage)
J. B. Dunne, B.Agr.Sc.: seed propagation (roots and fodder plants)
E. P. Harrington, B.Agr.Sc.: seed propagation (cereals)
J. F. Mullin, M.Agr.Sc.: seed testing; economic botany
P. O'Leary, B.Agr.Sc.: biometrics
T. O'Sullivan, B.Agr.Sc.: seed propagation, certification (herbage)
J. Purcell, B.Agr.Sc., M.Sc.: plant breeding
J. K. O'Donoghue, B.Agr.Sc.: certification (cereals)

1. Veterinary Research Laboratory

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T. Murphy, M.Sc., M.R.C.V.S., *Director*

H. Thornberry, M.R.C.V.S., *Deputy Director and Head: parasitology, including bee diseases*

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(g) MASTITIS

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2. Butter Testing Station

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M. S. McEnery, B.Sc., *Chemist*

Miss A. Tarpey, B.Sc., *Bacteriologist*

3. Cereal Station

Ballinacurra, Co. Cork. Tel.: Midleton 63257

T. J. R. O'Sullivan, B.Agr.Sc.: plant breeding

B. Gormley, B.Agr.Sc.: plant breeding

4. Munster Institute

Cork. Tel.: Cork 41045

P. D. Curran, B.Agr.Sc., *Superintendent*

5. Agricultural School

Athenry, Co. Galway. Tel.: Athenry 2

J. F. Ward, B.Agr.Sc., *Superintendent*

P. Boland, M.Agr.Sc.: plant breeding

REPUBLIC OF IRELAND

6. Agricultural School

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J. Foley, B.Agr.Sc., *Superintendent*

Vacant: plant breeding

7. Agricultural School

Ballyhaise, Co. Cavan. Tel.: Ballyhaise 8

T. A. Aylmer, B.Agr.Sc., *Superintendent*

Vacant: plant breeding

B. DEPARTMENT OF LANDS

Forestry Division, 22 Upper Merrion Street, Dublin 2. Tel.: 65821. Cables:
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O. V. Mooney, B.Agr.Sc., *Senior Inspector (Research)*

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G. J. de Brit, B.Agr.Sc.: entomology

A. M. S. Hanan, Agr.For.B.: silviculture

P. Hand, B.Agr.Sc.: silviculture

G. J. Gallagher, B.Agr.Sc.: thinning research

M. E. Cassidy, B.Agr.Sc.: thinning research

L. P. O'Flanagan, B.Agr.Sc.: forest inventory; mensuration; working plans

J. D. Robinson, B.Agr.Sc.: forest inventory; mensuration; working plans

J. J. Purcell, B.Agr.Sc.: forest inventory; mensuration; working plans

C. AN FORUS TALÚNTAIS

(The Agricultural Institute)

33 Merrion Road, Ballsbridge, Dublin 4. Tel.: Dublin 693222. Cables:
Agres

The functions of the Institute are to review, facilitate, assist, co-ordinate, promote
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D. Murphy, B.Sc., M.Sc., Ph.D. (seconded to O.E.C.D. Survey on Science and
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(b) AGRICULTURAL LIAISON OFFICE

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1. Animal Production Division

Headquarters: Dunsinea, Castleknock, Co. Dublin. Tel.: Dublin 49923

S. Curran, M.Agr.Sc., *Chief of Division*

L. B. O'Moore, M.Sc., Ph.D., M.R.C.V.S., M.R.I.A., *Chief of Division*: survey of bloodstock nutrition

(a) ANIMAL BREEDING AND GENETICS DEPARTMENT

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E. P. Cunningham, M.Agr.Sc., Ph.D.: sire proving procedures

G. J. More O'Farrall, B.Agr.Sc.: selection experiments

Miss P. McGloughlin, B.S.Agr. (Georgia): progeny testing (pigs)

V. M. Timon, B.Agr.Sc., Ph.D.: sheep breeding

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(c) FIELD INVESTIGATIONS DEPARTMENT

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P. Rogers, M.V.B., M.R.C.V.S.: control of copper deficiency and grass tetany

(d) ANIMAL MANAGEMENT DEPARTMENT

A. Conway, B.Agr.Sc., *Head*: grass crop utilization

N. E. Downey, M.R.C.V.S., M.Sc., Ph.D.: parasitic infestations in cattle and sheep at pasture

R. McCarrick, B.Agr.Sc., M.Sc., Ph.D.: silage research

(e) ANIMAL NUTRITION AND BIOCHEMISTRY DEPARTMENT

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J. F. Connolly, M.Sc.: autoxidation of animal feeds

P. Drennan, B.Agr.Sc.: pig energy metabolism

T. Spillane, M.Sc., F.R.I.C., i/c of the analytical section

J. O'Shea, M.Sc.

Miss B. Wheeler, M.Sc., A.R.I.C.: vitamin assay

Miss P. McGeown, B.Sc.: amino acid assay and protein quality

M. J. Lawlor, M.Agr.Sc., Ph.D.: ruminant nutrition

(f) MEAT RESEARCH DEPARTMENT

M. A. Carroll, B.Sc., *Head*: quantitative carcass evaluation

J. V. McLoughlin, M.Sc., Ph.D., A.R.I.C.: factors affecting biochemical post-mortem changes in muscle in relation to meat quality

G. S. Guthrie, B.A.: microbiology

P. V. Hegarty, M.Sc.

ANIMAL PRODUCTION RESEARCH CENTRE

Grange, Dunsany, Co. Meath. Tel.: Dunsany 4

F. J. Harte, M.Agr.Sc., *Officer-in-Charge*: calf rearing; beef production

REPUBLIC OF IRELAND

(g) ANIMAL MANAGEMENT DEPARTMENT

A. V. Flynn, B.Agr.Sc.: grass conservation

P. B. O'Donovan, B.Agr.Sc., M.S., Ph.D.: beef cattle nutrition

(h) ANIMAL NUTRITION AND BIOCHEMISTRY DEPARTMENT

R. K. Wilson, B.Sc., Ph.D.: ruminant energy metabolism

DAIRYING RESEARCH CENTRE

Moorepark, Fermoy, Co. Cork. Tel.: Fermoy 183

M. J. Walshe, B.Agr.Sc., *Officer-in-Charge and Head, Dairy Husbandry Department*

(i) DAIRY MICROBIOLOGY DEPARTMENT

M. J. Mulcahy, M.Sc., *Head*: bacteriological quality of milk and milk products

T. Cogan, M.Sc.: cheese

F. O'Connor, M.Sc.: sterilized milk, dried milk, etc.

J. Palmer, M.Sc.: cleaning, sterilants, detergents

(j) DAIRY CHEMISTRY DEPARTMENT

T. C. A. McGann, M.Sc., Ph.D., *Head*: compositional surveys; analytical methods

W. K. Downey, M.Sc., Ph.D.: milk lipids; off-flavours

Miss K. Gardiner, M.Sc.: dairy chemistry; milk composition

(k) DAIRY HUSBANDRY DEPARTMENT

M. J. Cowhig, B.Agr.Sc.: milking machines

P. A. Gleeson, B.Agr.Sc.: dairy cow nutrition

J. P. Walsh, B.Agr.Sc., Ph.D.: factors affecting milk composition

(l) ANIMAL PHYSIOLOGY DEPARTMENT

J. F. Nyhan, M.V.B., M.R.C.V.S.: milk quality

(m) DAIRY TECHNOLOGY DEPARTMENT

A. C. O'Sullivan, M.Sc., Ph.D., *Head*

M. F. Murphy, M.Sc.: bulk tank milk collection; evaluation of butter-making processes

(n) PIG HUSBANDRY UNIT

J. F. O'Grady, B.Agr.Sc., M.Sc., *Officer-in-Charge*: pig husbandry

T. J. Hanrahan, B.Agr.Sc.: pig husbandry

SHEEP RESEARCH CENTRE

Creagh, Ballinrobe, Co. Mayo. Tel.: Ballinrobe 75

W. J. M. Black, B.Sc., Ph.D., *Officer-in-Charge*: sheep housing; ewe nutrition

(o) ANIMAL MANAGEMENT DEPARTMENT

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M. J. Drennan, B.Agr.Sc.: sheep husbandry

M. J. Hope-Cawdery, B.A., B.Sc.Vet., M.R.C.V.S., D.A.P.E.: liver fluke

Miss A. Kearney, M.Sc.: sheep parasitology

T. Nolan, B.Agr.: pasture management

(p) ANIMAL BREEDING AND GENETICS DEPARTMENT

J. P. Flanagan, B.Agr.Sc., Ph.D.: wool research

(q) ANIMAL NUTRITION AND BIOCHEMISTRY DEPARTMENT

W. Sheehan, B.Sc.: digestibility of grasses and hays

2. Horticulture and Forestry Division

Headquarters: Glasshouse and Vegetable Crops Research Station, Kinsealy, Malahide, Co. Dublin. Tel.: Dublin 350644

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J. G. D. Lamb, B.Agr.Sc.Hort., Ph.D., *Chief Horticultural Research Officer*

(a) DEPARTMENT OF VEGETABLE CROPS

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P. Doherty, B.Agr.Sc.Hort.

P. A. Gallagher, B.Agr.Sc., M.S.

Miss M. D. Prendiville, M.Agr.Sc.

*R. F. Murphy, B.Agr.Sc.Hort.

†F. MacNaeidhe, B.Agr.Sc.Hort.

(b) DEPARTMENT OF GLASSHOUSE CROPS

M. J. Woods, M.Agr.Sc.Hort., Ph.D., *Head*

H. K. Browne, B.Agr.Sc.Hort.

J. C. R. Seager, B.A., Agr.B.

M. Maher, B.Agr.Sc.Hort.

(c) DEPARTMENT OF PLANT PATHOLOGY

T. Kavanagh, M.Agr.Sc., B.Soc.Sc., Ph.D., *Head*

F. O'Riordain, B.Sc., M.I.Biol.

E. W. Ryan, M.Agr.Sc., Ph.D.

W. P. Staunton, B.Agr.Sc.Hort.

Mushroom Unit

Miss D. C. O'Donoghue, B.Sc.

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Plant Nutrition and Biochemistry

Miss E. Conroy, M.Sc.

Pomology Research Station

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Soft Fruits Research Centre

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T. Cleary, B.Agr.Sc.Hort.

Bee-keeping Research Unit

Clonroche, Co. Wexford

L. Feely, M.Agr.Sc.Hort., N.D.B.

3. Plant Sciences and Crop Husbandry Division

Oak Park, Carlow. Tel.: Carlow 41651

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T. F. Leonard, B.Agr.Sc., *Station Manager*

*Stationed at Plant Sciences Division, Oak Park, Carlow.

†Stationed at Peatland Research Station, Lullymore, Co. Kildare.

REPUBLIC OF IRELAND

(a) CROP HUSBANDRY DEPARTMENT

M. Neenan, M.Agr.Sc., Ph.D., *Head*: crop husbandry; plant protection
J. F. K. Eades, B.Sc., Ph.D.: evaluation of agrochemicals
Miss M. C. Frost, M.Sc.: plant protection research
B. Mitchell, M.Sc.: chemical weed control
T. M. Thomas, B.Agr.Sc.: chemical weed control

(b) PLANT CHEMISTRY DEPARTMENT

M. J. Clancy, M.Sc., Ph.D., F.R.I.C., F.I.C.I., *Head*: chemistry and biochemistry of farm crops for food; feed and industrial raw materials
C. E. O'Hara, M.Sc.: studies on cereal proteins

(c) PLANT BREEDING DEPARTMENT

B. S. Ahloowalia, M.Sc.Agr., Ph.D.: cytogenetics of grasses
V. Connolly, B.Agr.Sc., M.Sc.: genetics and breeding of clovers
J. Crowley, B.Sc.: grasses
L. Dowley, B.Agr.Sc.: potato breeding
J. Jennings, B.Agr.Sc.: kale, fodder beets and swedes
H. W. Kehoe, B.Agr.Sc.: potato breeding
M. A. de Valle Ribeiro, B.Sc., M.A., Ph.D.: genetics and breeding of grasses

(d) PLANT PATHOLOGY DEPARTMENT

A. G. Prendergast, B.Agr.Sc., Ph.D., *Head*: pathology of farm crops
P. C. Cunningham, M.Agr.Sc., M.Sc.: pathology of root-rot; fungus diseases of cereals
B. Dunne, B.Agr.Sc.: malting barley investigations
C. O'Rourke, M.Agr.Sc., Ph.D.: diseases of grasses and clovers and virus diseases

Nematology Station

c/o Comhlucht Siuicre Eireann Teo., Carlow. Tel.: Carlow 41651
A. M. Feeney, B.Agr.Sc.: entomology and nematology of sugar beet
F. McGloughlin, B.Agr.Sc.: nematology of sugar beet

(e) PLANT BREEDING DEPARTMENT

c/o Comhlucht Siuicre Eireann Teo., Thurles, Co. Tipperary. Tel.: Thurles 11
L. J. O'Connor, B.Agr.Sc., *Officer-in-Charge*: sugar beet breeding
P. Fitzgerald, B.Agr.Sc.: sugar beet breeding
J. B. McLachlan, B.A., Agr.B.: sugar beet breeding

Cytology Unit

Miss E. Dwyer, M.Sc.: sugar beet cytology
Miss S. Forde, M.Sc.: sugar beet cytology

(f) PLANT CHEMISTRY DEPARTMENT

P. A. Kearney, M.Sc.: sugar beet chemistry

(g) CEREAL CHEMISTRY DEPARTMENT

Kinsealy, Malahide, Co. Dublin. Tel.: Dublin 350644
P. A. Spillane, M.Sc., *Head*: wheat chemistry; influence of fertilizers and herbicides on quality; effects of wheat breeding on quality
J. G. Corr, B.Sc.: biochemical factors in wheat quality

(h) NEMATOLOGY DEPARTMENT

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R. Dunne, B.Agr.Sc.: aphids and virus yellows
J. F. Moore, M.Agr.Sc.: nematology

4. Rural Economy Division

Headquarters: Sandymount Avenue, Ballsbridge, Dublin 4. Tel.: 684791

T. Breathnach, M.Agr.Sc., *Chief of Division*

(a) AGRICULTURAL ECONOMICS AND FARM MANAGEMENT DEPARTMENT

E. A. Attwood, M.A., Ph.D., *Head*

M. Brannick, B.Agr.Sc.: economics of farm management

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A. Conway, B.Agr.Sc.: economics of farm management

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J. Galvin, M.Agr.Sc.: soil moisture availability and soil structure

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(h) GRASSLAND NUTRITION AND ECOLOGY DEPARTMENT

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